ioLogik R2110 User's Manual

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ioLogik R2110 User's Manual

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Introduction

The ioLogik R2110 is a stand-alone remote digital I/O server that can connect sensors for automation applications over an RS-485 connection.

The following topics are covered in this chapter:

- **Overview**
- **Optional Liquid Crystal Display Module (LCM)**
- **Product Features**
- **Packing List**
- **Specifications**
- **Physical Dimensions**
- **LED Indicators**
- **Hardware Reference**
- **Pin Assignments**

Overview

(shown with and without optional LCM)

The ioLogik R2110 is a member of the R2000 series of remote I/O servers, which are designed to link sensors, transmitters, transducers, and valves to an RS-485 network.

The ioLogik R2110 can be attached to an ioLogik E2000 series server so I/O points can be accessed from within a single IP environment. One ioLogik E2000 series server can connect up to 31 ioLogik R2000 series servers.

Optional Liquid Crystal Display Module (LCM)

The ioLogik R2110 supports an optional hot-pluggable liquid crystal display module (LCM) for field management and configuration. The module can be used for on-site configuration or monitoring, and works with any ioLogik E or R series product.

Product Features

- 12 channels of 24 VDC digital input (DI) with event counter mode and software selectable filtering time
- 8 channels of 24 VDC digital output (DO) with pulse output mode and software selectable pulse width
- Multi-functional I/O supporting DI, event counter, DO, and pulse output
- Supports Modbus/RTU for control by SCADA software, including Wonderware InTouch and GE Intellution iFix32
- Optional LCD module for status display and configuration
- Remote firmware updates via RS-485
- Monitoring and configuration with ioAdmin Windows utility
- Hardware detection over RS-485 with ioAdmin
- MXIO DLL library for I/O status over RS-485
- Built-in watchdog timer with configurable safe I/O channel settings
- Configurable power-on status for output channels
- ROHS compliant

Packing List

The ioLogik R2110 is shipped with the following items:

Standard Accessories

- ioLogik R2110 RS-485 I/O server
- Document & Software CD

Optional Accessories

- LDP1602 ioLogik liquid crystal display module (LCM)

NOTE: Please notify your sales representative if any of the above items are missing or damaged.

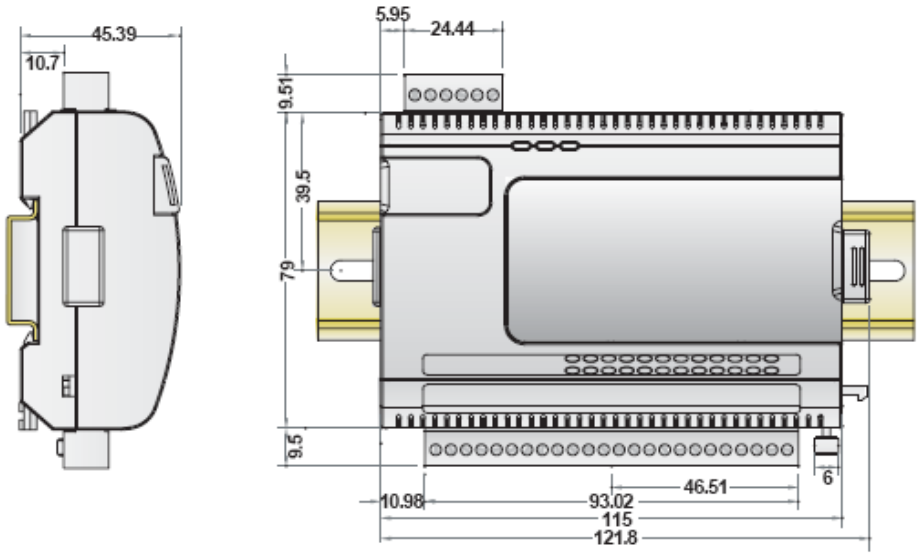
Specifications

Serial		
Interface	2-wire RS-485 with Data+, Data-, GND	
Serial Line Protection	15 KV ESD for all signals	
Serial Communication Parameters		
Baudrates	1200 to 115200 bps	
Direction Control	Built-in ADDC™	
Parity	None	
Data Bits	8	
Stop Bits	1	
Flow Control	None	
Speed	1200 to 115200 bps	
Protocol	Modbus/RTU	
Digital Input		
Channels	12 fixed points, source type	
DI COM Power Input	24 VDC nominal, up to 36 VDC	
Modes	DI or Event Counter (up to 50 Hz)	
	Dry contact	Logic 0: close to GND Logic 1: open
	Wet contact	Logic 0: 0 to 3 VDC Logic 1: 10 to 30 VDC (DI COM to DI)
Common Type	12 points/1 COM	
Isolation	3000 VDC/2000 Vrms	
Protection	+36 VDC over voltage protection	
Digital Output		
Channels	8 fixed points, sink type	
Modes	DO or Pulse Output (up to 50 Hz)	
DO Power Input	24 VDC nominal, up to 30V	
Output Current Rating	200 mA max. per channel	
Optical Isolation	3000 VDC / 2000 Vrms	
Protection	170°C min. over temperature shutdown +36 VDC over voltage protection 750 mA over current limit (typical)	
System Power Input		
Power Input	24 VDC nominal, 12 to 48 VDC	
Power Consumption	4.68W @24 VDC	
Ground Connection	DIN-rail and wall mounting plates	
Environmental		
Operating Temperature	-10 to 60ºC (14 to 140ºF), 5 to 95%RH	
Storage Temperature	-40 to 85ºC (-4 to 185ºF), 5 to 95% RH	

Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6
MTBF	> 200,000 hrs @ 25°C
Agency Approvals	
EMC	FCC Part 15, CISPR (EN55022) Class A CE-IEC61000-4-2 (ESD), Level 2/3 CE-IEC61000-4-3 (RS), Level 2 CE-IEC61000-4-4 (EFT), Level 2 CE-IEC61000-4-5 (Surge), Level 3 CE-IEC61000-4-6 (CS), Level 2 CE-IEC61000-4-8 (PM), Level 1 CE-IEC61000-4-11 (Dip) CE-EN61000-6-2 CE-EN61000-6-4
Safety	UL 508
Warranty	2 years
Accessories	
Liquid Crystal Display Module (LCM)	Hot-pluggable attachment for IP display, DI/DO status 16x2 character display Backlit screen 5 buttons

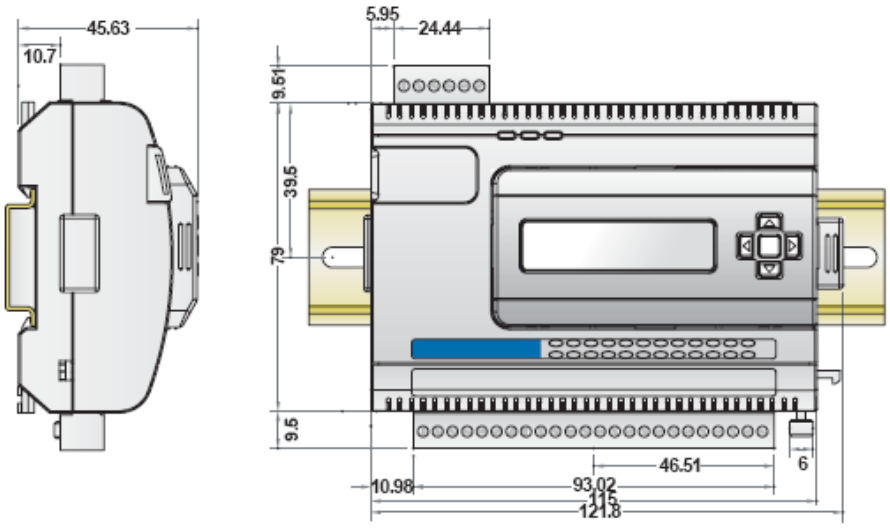
Physical Dimensions

Without LCM

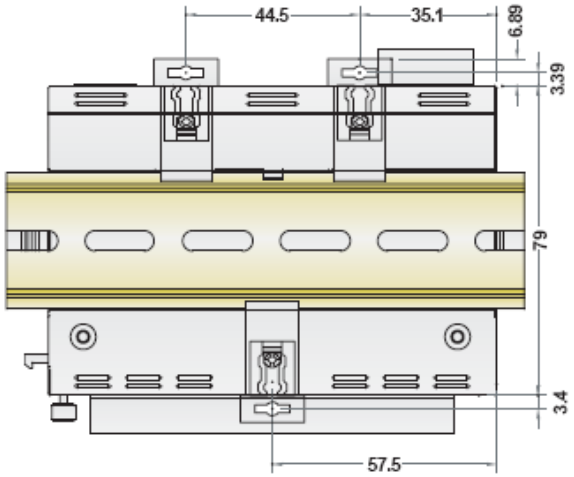


Unit=mm

With Optional LCM



Unit=mm



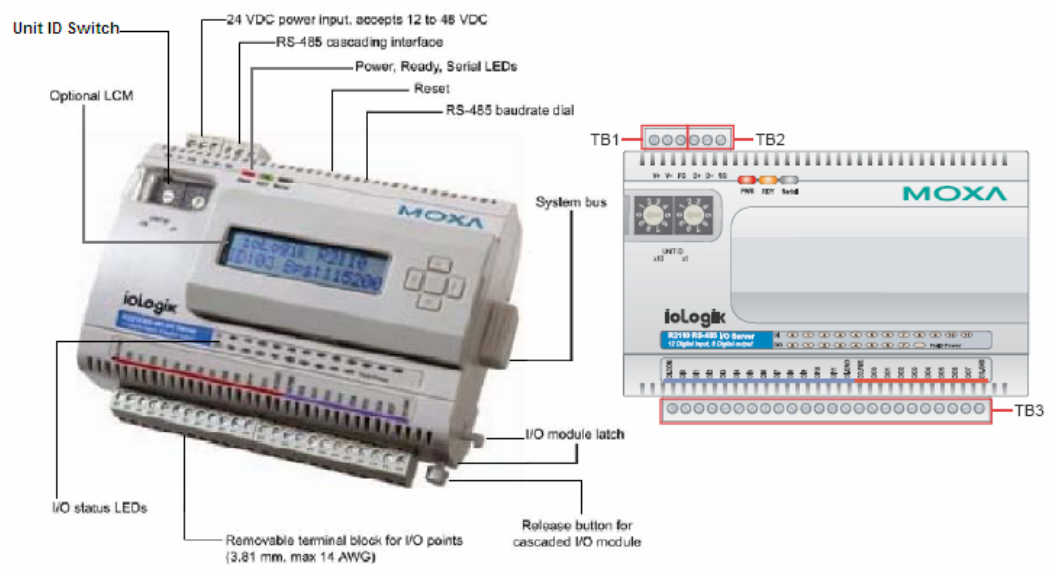
Unit=mm

LED Indicators

System LEDs		
PWR	red	Power is on
	off	Power is off
RDY	red	System error
	green (steady)	ioLogik is functioning normally
	green & red (flashing)	ioLogik is in Safe Status
	off	Power is off or there is a power problem
Serial	(flashing)	Serial port is receiving/transmitting data

I/O LEDs		
DI × 12 DO × 8	green	ON status
	off	OFF status
DO PWR	red	Field power in
	off	No power in

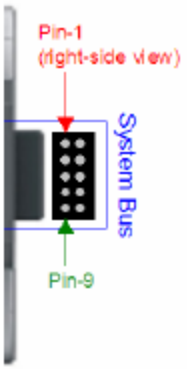
Hardware Reference



NOTE: The reset button restarts the server and resets all settings to factory default. Use a pointed object such as a straightened paper clip to hold the reset button down for 5 sec. The RDY LED will turn red as you are holding the reset button down. The factory defaults will be loaded once the RDY LED turns green again. You may then release the reset button.

Pin Assignments

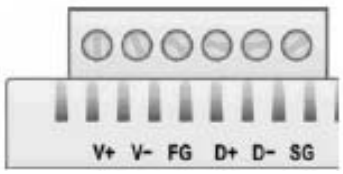
System Bus



Pin	1	2	3	4	5
Signal	V+	V-	V+	V-	NC

Pin	6	7	8	9	10
Signal	NC	Data+	SYNC	Data-	GND

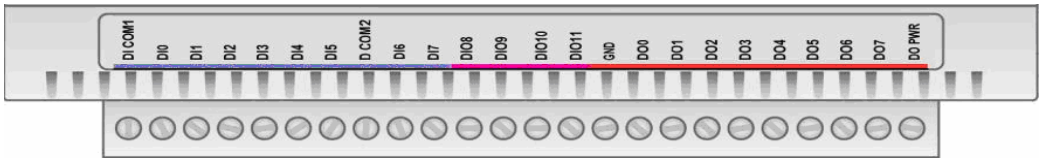
TB1 and TB2 (Power Input & RS-485 Connector)



	TB1 (Power Input)			TB2 (RS-485)		
Pin	1	2	3	4	5	6
Signal	V+	V-	FG	D+	D-	SG

NOTE: FG is Frame Ground, SG is Signal Ground

TB3 (Digital Input and Output Terminal)



Pin	1	2	3	4	5	6	7	8	9
Signal	DI COM	DI0	DI1	DI2	DI3	DI4	DI5	DI6	DI7

Pin	10	11	12	13	14	15	16	17	18
Signal	DI8	DI9	DI10	DI11	DI GND	DO PWR	DO0	DO1	DO2

Pin	19	20	21	22	23	24
Signal	DO3	DO4	DO5	DO6	DO7	DO GND

2

Initial Setup

This chapter describes how to install the ioLogik R2110.

The following topics are covered:

- **Hardware Installation**
  - Connecting the Power
  - Grounding the ioLogik R2110
  - Connecting to Digital Sensors and Devices
  - Setting the RS-485 Baudrate
  - Modbus/RTU Devices
- **Software Installation**

Hardware Installation

Connecting the Power

Connect the 12 to 48 VDC power line to the ioLogik R2110's terminal block (TB1). If power is properly supplied, the power LED will glow a solid red color until the system is ready

ATTENTION

Disconnect the power before installing and wiring.
Disconnect the power cord before installing and/or wiring your ioLogik R2110.

To protect your system, power up the ioLogik first, then the sensors.
When powering down, shut off power to the sensors first, then the ioLogik.

Do not exceed the maximum current for the wiring.
Determine the maximum possible current for each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

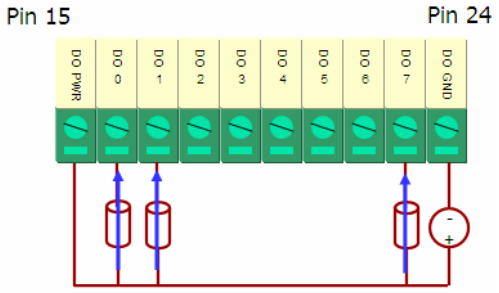
If the current exceeds the maximum rating, the wiring could overheat, causing serious damage to your equipment.

Grounding the ioLogik R2110

The ioLogik R2110 is equipped with two grounding points, one on the back wall-mounting plate and the other on the DIN-rail attachment.

Connecting to Digital Sensors and Devices

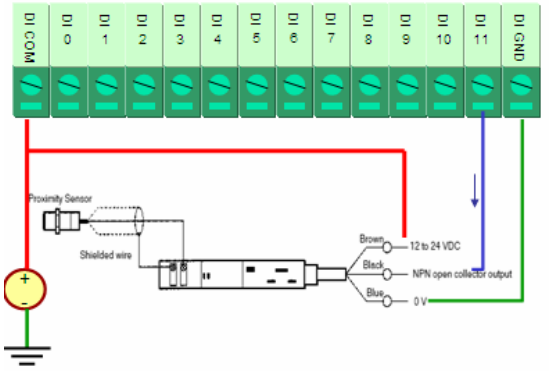
Digital Output



Digital Input, Dry Contact

Digital Input, Wet Contact

Digital Input, Example



Setting the RS-485 Baudrate

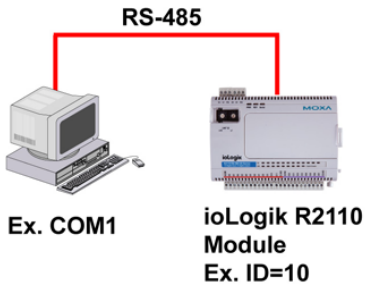
The RS-485 port is used to communicate with other RS-485 devices or to link to another ioLogik RS-485 I/O server. The RS-485 port can run Modbus/RTU or I/O command sets. The baudrate is set by a physical dial on the back of the ioLogik R2110. The default settings are baudrate = 115200, parity check = N, data bits = 8, and stop bit = 1.

	Baudrate for RS-485 (parameters are N, 8, 1)	Dial setting and corresponding baudrate: 0:115200 1:57600 2:38400 3:19200 4:9600 5:4800 6:2400 7:1200

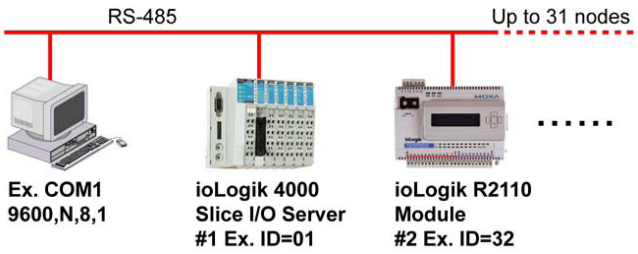
Modbus/RTU Devices

The RS-485 port runs Modbus/RTU and can connect to any Modbus device. You may use different methods to connect different combinations of ioLogik R2000 servers and other Modbus devices. Some examples are shown below:

Connecting One Modbus/RTU Device



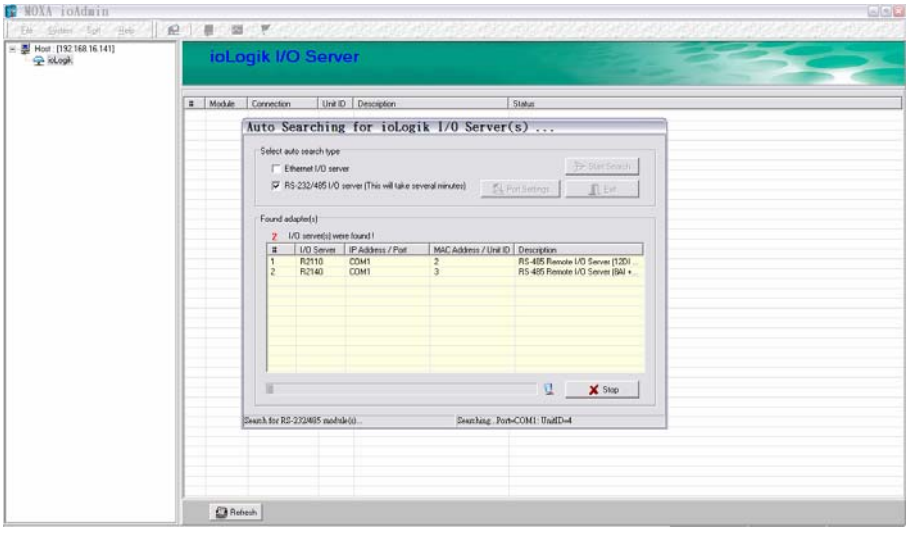
Connecting Multiple Modbus/RTU Devices



Software Installation

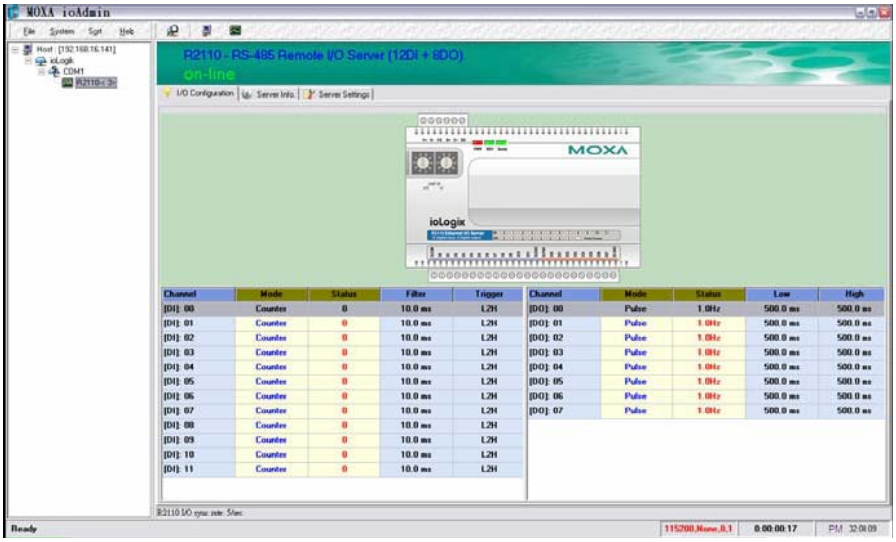
ioAdmin is a Windows utility that can connect to the ioLogik R2110 for configuration and management. The ioLogik R2110 may also be configured through the optional LCM.

1. **Install from the Document and Software CD**: Insert the Document and Software CD into the host computer. In the root directory of the CD, locate and run SETUP.EXE. The installation program will guide you through the installation process and install the ioAdmin utility. You can also install the MXIO DLL library or ioEventLog separately.
2. **Open ioAdmin**: After installation is finished, run ioAdmin from **Start → Program Files → MOXA → IO Server → Utility → ioAdmin**.
3. **Search for the server**: On the menu bar, select **System → Auto Scan Remote I/O Server**. In the dialog window, select **RS-232/485 I/O server** and click **Start Search**.



If ioAdmin is unable to find the ioLogik R2110, there may be a problem with your COM port settings. Click **Port Settings** to view or modify the settings.

4. **Monitor I/O status**: Once the unit is found by ioAdmin, you may view the status of all attached I/O devices on ioAdmin's main screen.



You may now use ioAdmin to setup or configure the unit.

3

Using ioAdmin

This chapter goes over the functions available in ioAdmin, the ioLogik R2110's main configuration and management utility.

The following topics are covered:

- **Introduction to ioAdmin**
- **Features of ioAdmin**
  - Searching for the Unit
- **ioAdmin Main Screen**
  - Main Screen Overview
  - Wiring Guide
- **Menu Items**
- **Main Window**
- **ioAdmin Administrator Functions**
  - I/O Configuration Tab (Administrator)
  - Server Settings Tab (Administrator)
  - Firmware Update Tab
  - Watchdog Tab
  - Server Context Menu

Introduction to ioAdmin

The ioLogik I/O server may be managed and configured over the Ethernet by ioAdmin, a Windows utility provided with your ioLogik R2110. ioAdmin's graphical user interface gives you easy access to all status information and settings.

The ioLogik R2110 also supports configuration by web console and by optional LCM, but full configuration and management is only available through ioAdmin.

ioAdmin also includes Click&Go logic control for the configuration of your Active Ethernet I/O system.

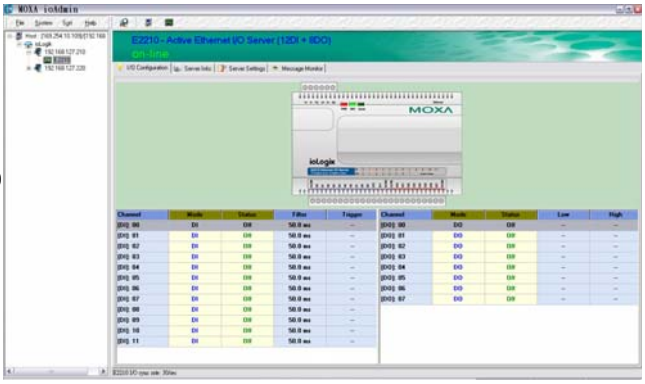
ioAdmin consists of following software:

- **ioAdmin with Click&Go Logic**
- **ioLogik 2000 Wiring Guide**
- **ioLogik 4000 Wiring Guide**

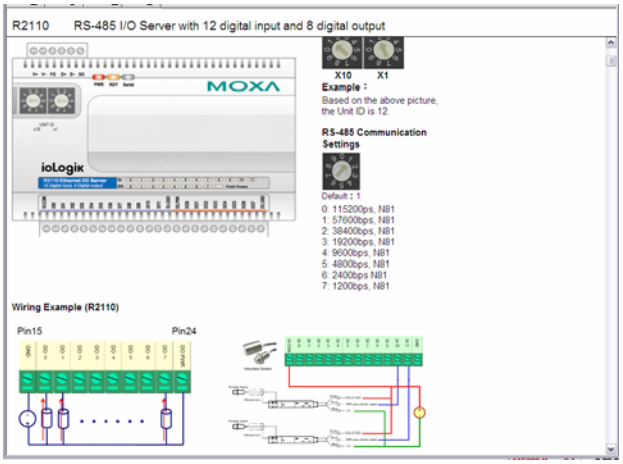
Features of ioAdmin

Remote Management
Over the RS-485 network, ioAdmin allows users to

- find and configure multiple ioLogik servers
- monitor and configure attached I/O devices
- test I/O devices
- reset the server



On-line Wiring Guide
An on-line wiring guide can be opened from within ioAdmin for your convenience. The easily accessible wiring guide can save administrators much time while planning or troubleshooting.



Configuration File

ioAdmin allows the entire configuration of the ioLogik R2110 to be saved as a file. The file is viewable as text and can serve three purposes:

- as a record or backup of configuration
- as a template for the configuration of other servers
- as a quick reference guide for you to configure Modbus drivers in a SCADA system

The file includes the following information:

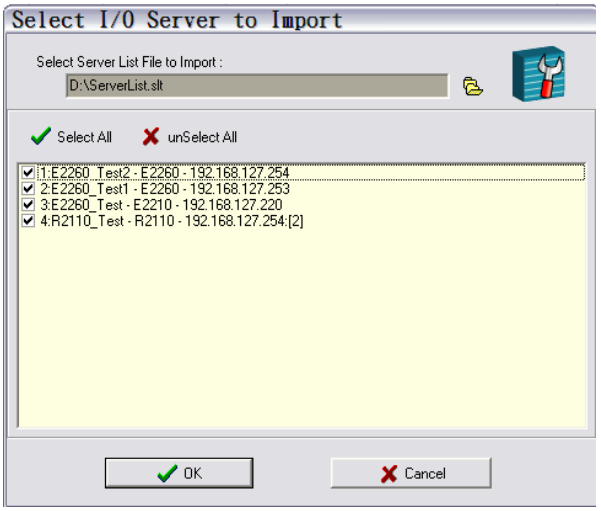
- file name, date, and time
- model information
- Modbus addresses

```
ioLogik R2110 Remote I/O Server Configuration
=============================================
Date: 2007/11/16
Time: 下午 02:59:31
Firmware: V1.2 Build07052213

[1. Model]
----------
MOD_TYPE=R2110 - RS-485 Remote I/O Server (12DI + 8DO)
MOD_LOC=
MOD_NAME=

[2. I/O Configurations]
-----------------------
DI00=0,(DI),            DI00_FILTER=1,(0.50ms)
DI01=0,(DI),            DI01_FILTER=1,(0.50ms)
DI02=0,(DI),            DI02_FILTER=1,(0.50ms)
DI03=0,(DI),            DI03_FILTER=1,(0.50ms)
DI04=0,(DI),            DI04_FILTER=1,(0.50ms)
DI05=0,(DI),            DI05_FILTER=1,(0.50ms)
DI06=0,(DI),            DI06_FILTER=1,(0.50ms)
DI07=0,(DI),            DI07_FILTER=1,(0.50ms)
DI08=0,(DI),            DI08_FILTER=1,(0.50ms)
DI09=0,(DI),            DI09_FILTER=1,(0.50ms)
DI10=0,(DI),            DI10_FILTER=1,(0.50ms)
DI11=0,(DI),            DI11_FILTER=1,(0.50ms)

DO00=0,(DO),            DO00_PWN=0,(Off),       DO00_SAFE=0,(Off)
DO01=0,(DO),            DO01_PWN=0,(Off),       DO01_SAFE=0,(Off)
DO02=0,(DO),            DO02_PWN=0,(Off),       DO02_SAFE=0,(Off)
DO03=0,(DO),            DO03_PWN=0,(Off),       DO03_SAFE=0,(Off)
DO04=0,(DO),            DO04_PWN=0,(Off),       DO04_SAFE=0,(Off)
DO05=0,(DO),            DO05_PWN=0,(Off),       DO05_SAFE=0,(Off)
DO06=0,(DO),            DO06_PWN=0,(Off),       DO06_SAFE=0,(Off)
DO07=0,(DO),            DO07_PWN=0,(Off),       DO07_SAFE=0,(Off)

[3. Modbus address table]
-------------------------
```

Server Management List

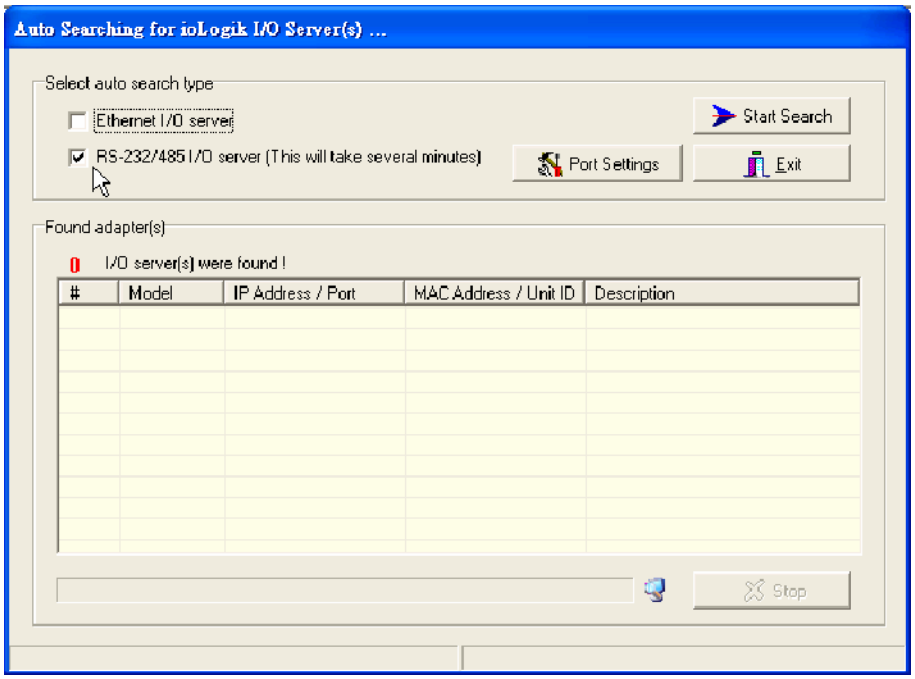
ioAdmin can import and export a list of ioLogik servers that are being managed. This file can make it easier to manage all devices on the network, and includes the following information:

- server name
- module type
- IP address
- unit ID

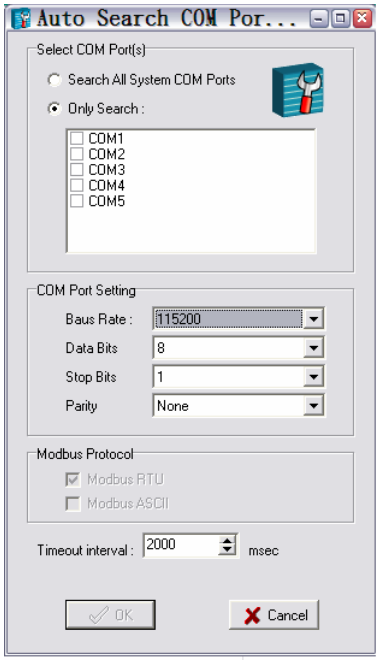


Searching for the Unit

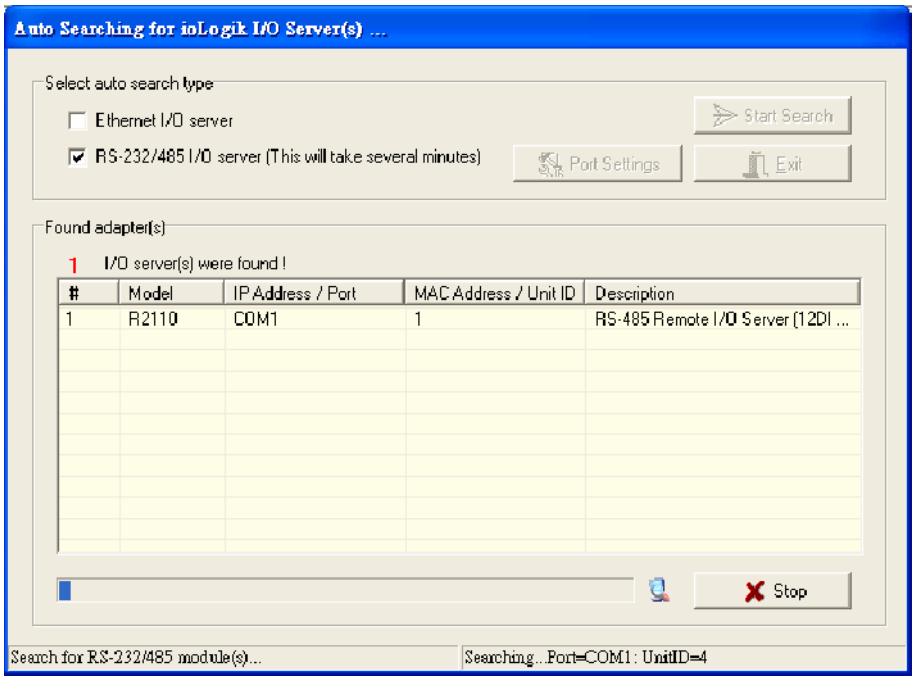
After opening ioAdmin, you will need to find your unit over the RS-485 connection. From the pull-down menu, choose **System - Auto Scan Remote I/O Server.**



Select **RS-232/485 I/O server** and click **Port Settings** to set/verify the serial port settings.



When you click **Start Search,** ioAdmin will begin searching up to 99 ports for your ioLogik unit. The timeout interval is for RS-485 communication and defaults to 2000 ms. As soon as your ioLogik R2110 appears as shown below, you may click **Stop.** Otherwise, ioAdmin will continue to search all 99 ports.


Auto Searching for ioLogik I/O Server(s) ...
Select auto search type
Ethernet I/O server
RS-232/485 I/O server (This will take several minutes)
Start Search
Port Settings
Exit
Found adapter(s)
1 I/O server(s) were found !
Model IP Address / Port MAC Address / Unit ID Description
1 R2110 COM1 1 RS-485 Remote I/O Server (12DI ...
Stop
Search for RS-232/485 module(s)...
Searching...Port=COM1 : UnitID=4

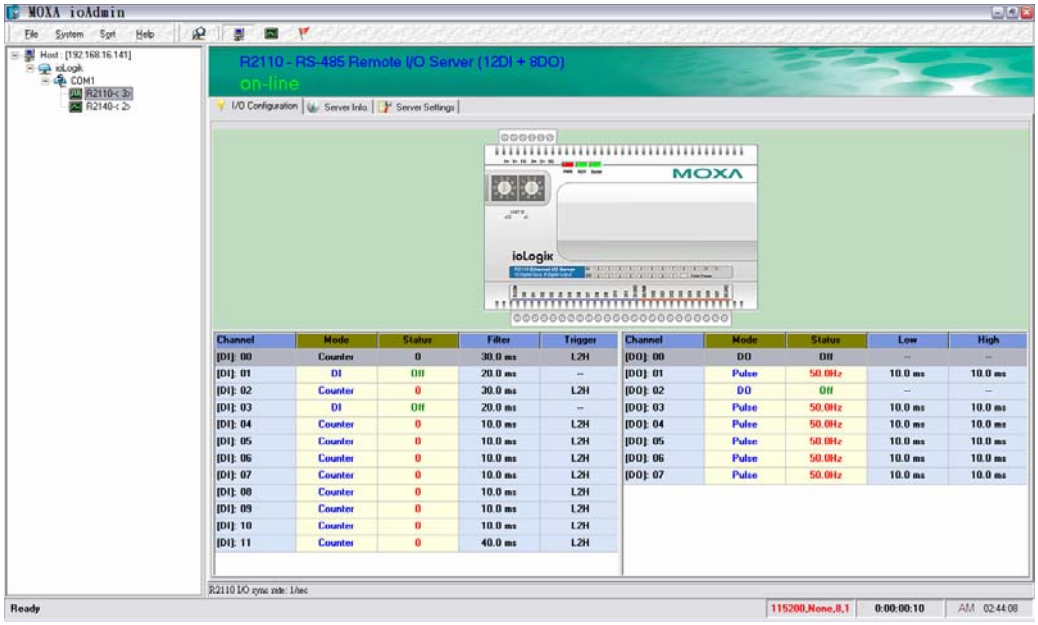
ATTENTION

If ioAdmin is unable to find your ioLogik R2110, make sure that the baudrates match. Please refer to Chapter 2 for setting or viewing the baudrate.

ATTENTION

Even if ioAdmin is unable to find your ioLogik R2110, you may still access the On-line Wiring Guide. Please refer to the On-line Wiring Guide section for details.

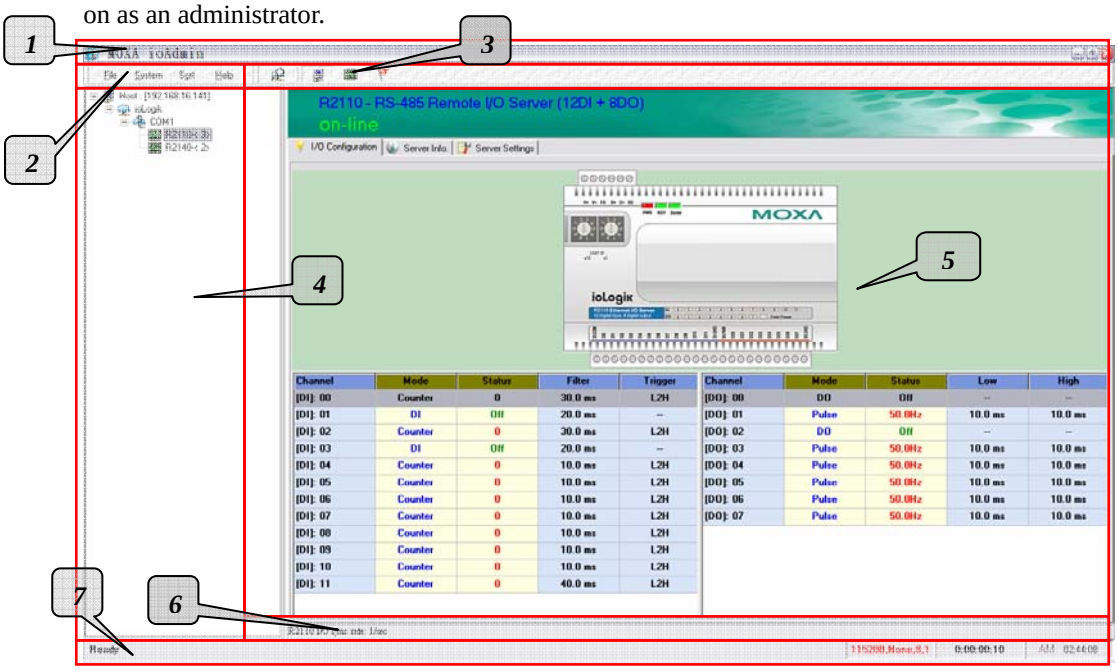
Once the ioLogik R2110 has been found by ioAdmin, you may monitor I/O status from the first tab of ioAdmin. You can also configure each DI and DO channel from this tab after first logging in under the Management tab.


MOXA ioAdmin
File System Port Help
Host : [192.168.16.141]
ioLogik
COM1
R2110-< 3>
R2140-< 2>
R2110 - RS-485 Remote I/O Server (12DI + 8DO)
on-line
I/O Configuration
Server Info.
Server Settings
MOXA
ioLogik
Channel Mode Status Filter Trigger
[DI]: 00 Counter 0 30.0 ms L2H
[DI]: 01 DI Off 20.0 ms --
[DI]: 02 Counter 0 30.0 ms L2H
[DI]: 03 DI Off 20.0 ms --
[DI]: 04 Counter 0 10.0 ms L2H
[DI]: 05 Counter 0 10.0 ms L2H
[DI]: 06 Counter 0 10.0 ms L2H
[DI]: 07 Counter 0 10.0 ms L2H
[DI]: 08 Counter 0 10.0 ms L2H
[DI]: 09 Counter 0 10.0 ms L2H
[DI]: 10 Counter 0 10.0 ms L2H
[DI]: 11 Counter 0 40.0 ms L2H
Channel Mode Status Low High
[DO]: 00 DO Off -- --
[DO]: 01 Pulse 50.0Hz 10.0 ms 10.0 ms
[DO]: 02 DO Off -- --
[DO]: 03 Pulse 50.0Hz 10.0 ms 10.0 ms
[DO]: 04 Pulse 50.0Hz 10.0 ms 10.0 ms
[DO]: 05 Pulse 50.0Hz 10.0 ms 10.0 ms
[DO]: 06 Pulse 50.0Hz 10.0 ms 10.0 ms
[DO]: 07 Pulse 50.0Hz 10.0 ms 10.0 ms
R2110 I/O sync rate: 1/sec
Ready
115200,None,8,1
0:00:00:10
AM 02:44:08

ioAdmin Main Screen

Main Screen Overview

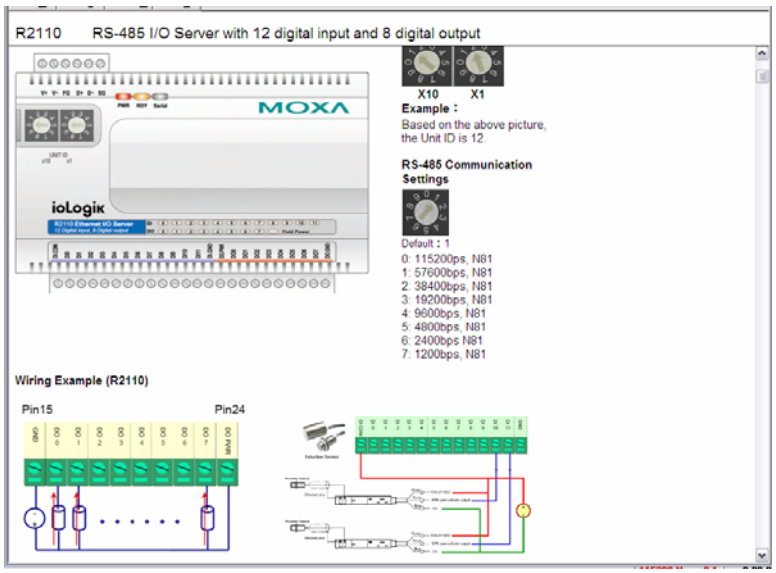
This is ioAdmin's main screen. The main window defaults to the I/O Configuration tab, which displays a graphic of the ioLogik R2110 and the status of every I/O channel below it. The other tabs in the main window take you to server and network settings, and further functions are available when you log on as an administrator. Note that configuration options are not available until you log on as an administrator.



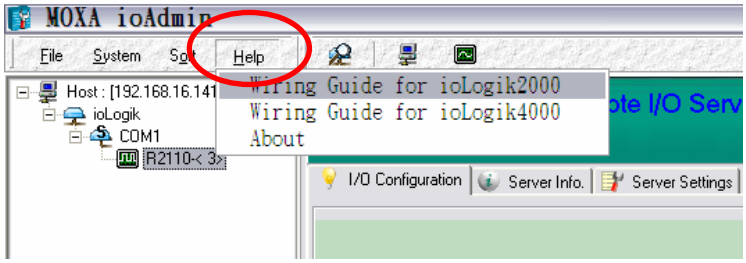
1.	Title
2.	Menu bar
3.	Quick link
4.	Navigation panel
5.	Main window
6.	Sync. rate status
7.	Status bar

Wiring Guide

ioAdmin provides a wiring guide to the ioLogik R2110. You may access the wiring guide by right-clicking the graphic of the ioLogik R2110 in the I/O Configuration tab. Select "Wiring Guide" in the submenu to open a help file showing the wiring information and electrical characteristics of the ioLogik R2110.



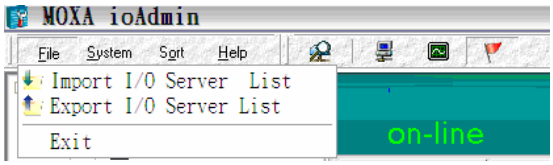
You may also access the On-line Wiring Guide through the Help menu on the menu bar.



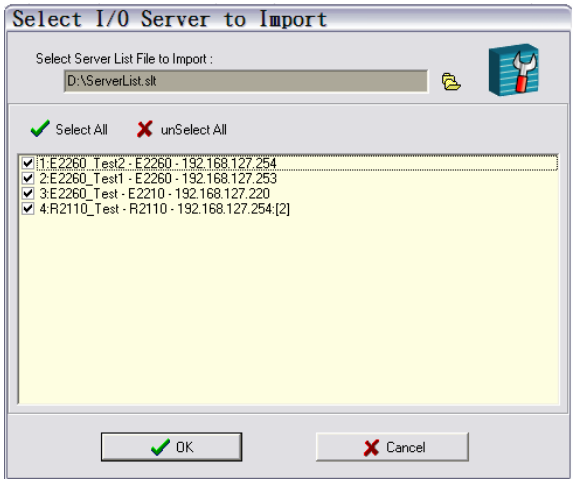
Menu Items

File

From the **File** menu, you can export the list of I/O servers that are currently displayed in the navigation panel. You also can import a list of I/O servers into ioAdmin.



When importing a server list, you will be prompted to select which servers on the list need to be imported.



The file will have a .SLT extension and can be opened as a text file. The server list will provide the following information for each server:

- server name
- module type
- IP address
- unit ID

System

Several operations are possible from the **System** menu.

Auto Scan Active Ethernet I/O Server will search for ioLogik servers on the network. When connecting for the first time or recovering from a network disconnection, you can use this command to find I/O servers that are on the network.

Network Interface allows you to select a network to use, if the PC has multiple network adapters installed.

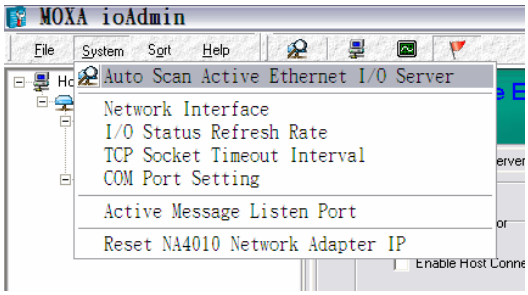
I/O Status Refresh Rate is used to adjust how often the I/O server is polled for device status. The current rate is displayed on the status bar at the bottom of the window. Note that higher sync rates result in higher loads on the network.

TCP Socket Timeout Interval allows you to select the preferred timeout value for TCP socket communication.

COM Port Setting is used to set the parameters for Modbus communication, such as baudrate, data bits, and timeout interval. For most applications, this will involve connecting to ioLogik R-Series devices.

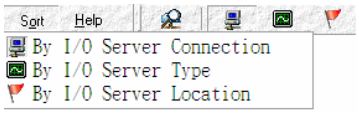
Active Message Listen Port specifies the port number to use for Active Ethernet I/O messages. If your network uses a firewall, you can coordinate this setting with your firewall settings to ensure that active messages get through.

Reset NA4010 Network Adapter IP is used to re-assign an IP address to the NA-4010 network adapter, for ioLogik 4000 systems.



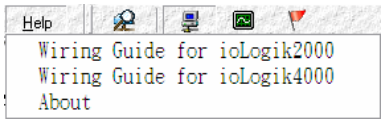
Sort

The **Sort** menu allows the server list in the navigation panel to be sorted by connection, type, and location.



Help

In the **Help** menu, you can view wiring guides and information about ioAdmin.



Quick Links

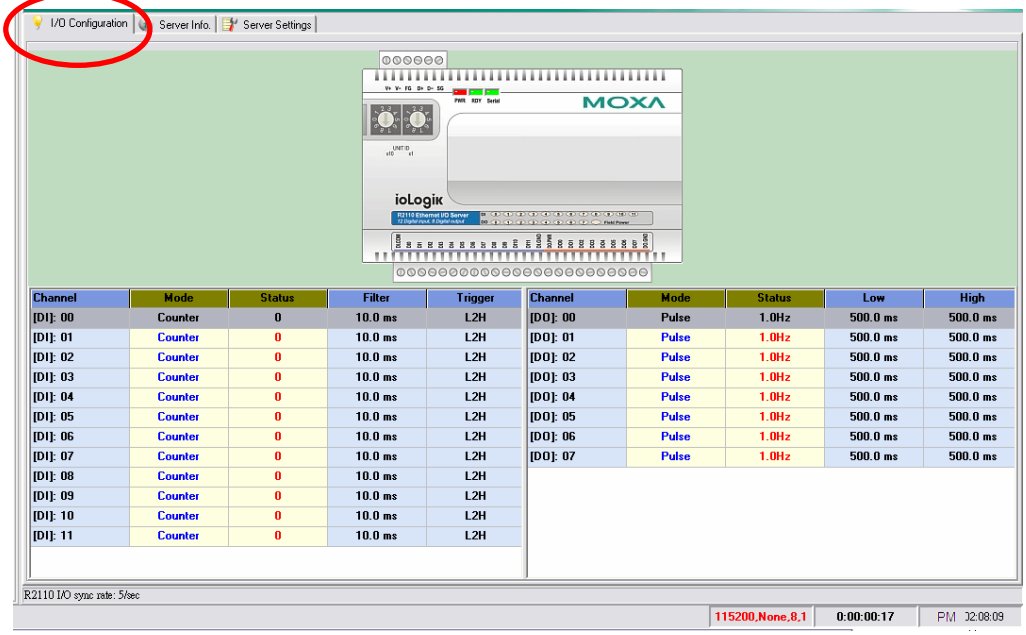
Quick links are provided to search for I/O servers on the network and sort the server list.

	Search network for I/O servers
	Sort by connection
	Sort by I/O server type
	Sort by location

Main Window

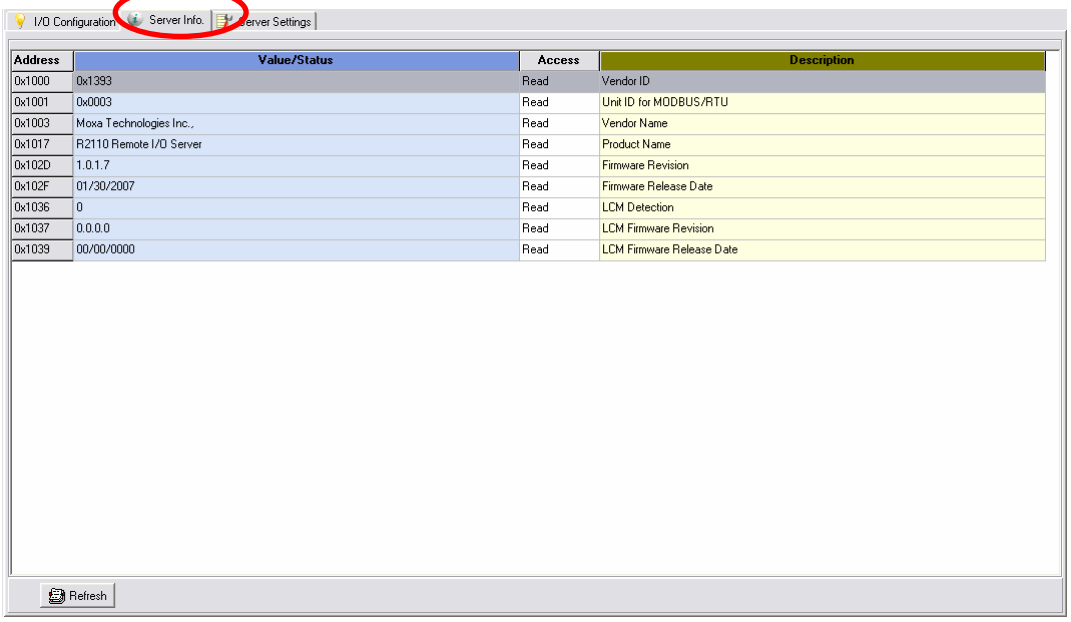
I/O Configuration Tab (General)

The **I/O Configuration** tab shows the status of every I/O channel. This is the default tab when you first open ioAdmin.


I/O Configuration
Server Info.
Server Settings
MOXA
ioLogik
Channel Mode Status Filter Trigger
[DI]: 00 Counter 0 10.0 ms L2H
[DI]: 01 Counter 0 10.0 ms L2H
[DI]: 02 Counter 0 10.0 ms L2H
[DI]: 03 Counter 0 10.0 ms L2H
[DI]: 04 Counter 0 10.0 ms L2H
[DI]: 05 Counter 0 10.0 ms L2H
[DI]: 06 Counter 0 10.0 ms L2H
[DI]: 07 Counter 0 10.0 ms L2H
[DI]: 08 Counter 0 10.0 ms L2H
[DI]: 09 Counter 0 10.0 ms L2H
[DI]: 10 Counter 0 10.0 ms L2H
[DI]: 11 Counter 0 10.0 ms L2H
Channel Mode Status Low High
[DO]: 00 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 01 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 02 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 03 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 04 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 05 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 06 Pulse 1.0Hz 500.0 ms 500.0 ms
[DO]: 07 Pulse 1.0Hz 500.0 ms 500.0 ms
R2110 I/O sync rate: 5/sec
115200,None,8,1
0:00:00:17
PM 12:08:09

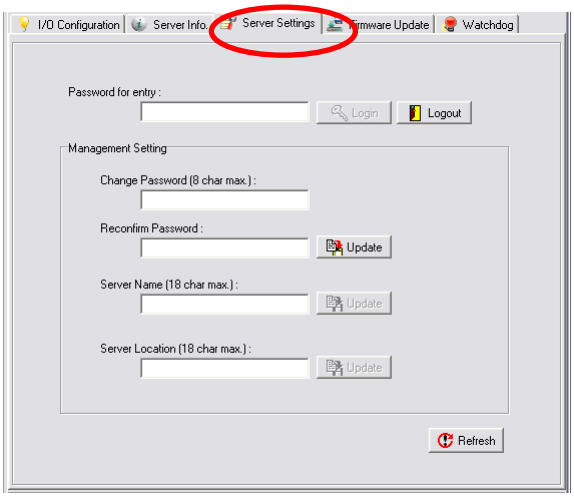
Server Info Tab

The **Server Information** tab provides the Modbus addresses for all system configurations. This helps you verify the access authority of each address. The screen also displays a clear explanation of each item.


I/O Configuration
Server Info.
Server Settings
Address Value/Status Access Description
0x1000 0x1393 Read Vendor ID
0x1001 0x0003 Read Unit ID for MODBUS/RTU
0x1003 Moxa Technologies Inc., Read Vendor Name
0x1017 R2110 Remote I/O Server Read Product Name
0x102D 1.0.1.7 Read Firmware Revision
0x102F 01/30/2007 Read Firmware Release Date
0x1036 0 Read LCM Detection
0x1037 0.0.0.0 Read LCM Firmware Revision
0x1039 00/00/0000 Read LCM Firmware Release Date
Refresh

Server Settings Tab (General)

The **Server Settings** tab is where you log in as an administrator. This is required in order to gain access to the ioLogik R2110 configuration options. If no administrator password has been set up, simply click on **Login** and leave the **Password for entry** field blank. Additional information on ioAdmin administrator functions is provided later in this chapter.



ioAdmin Administrator Functions

For full access to all configuration options, log in as an administrator in the Server Settings tab. This is required whenever you start up ioAdmin or boot up/restart the ioLogik R2110. When you install the ioLogik R2110 for the first time, the password will be blank and you may simply click on **Login**. Additional tabs and functions will available after logging in.

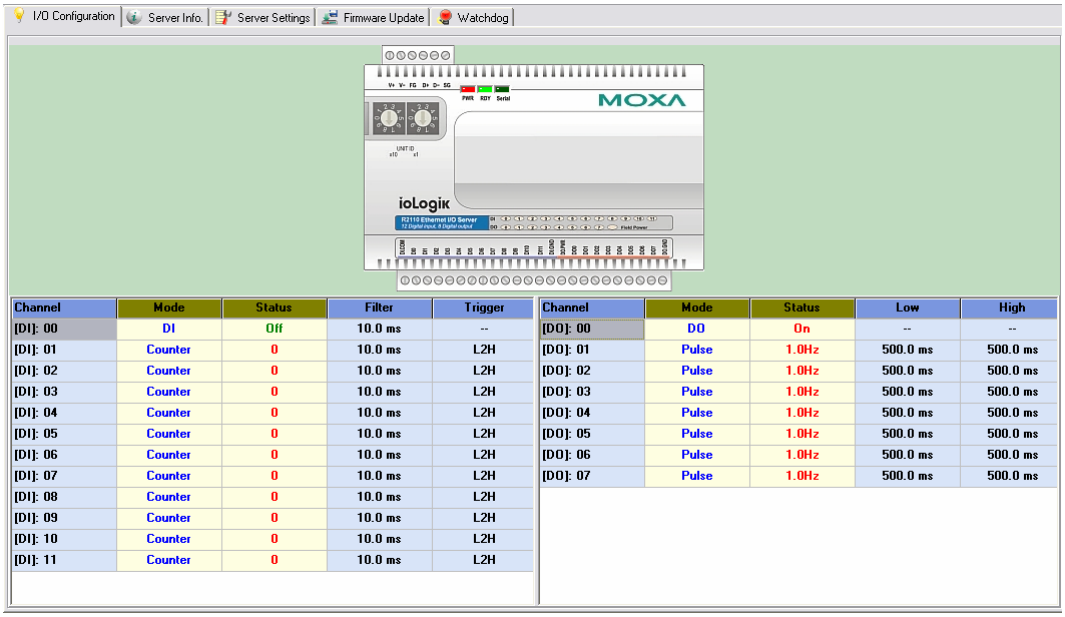
When making configuration changes, you will need to click on **Update** or on **Apply** to save the changes. Some changes will require a restart of the ioLogik R2110 in order to take effect, and you will be given the option to restart the computer if necessary.

ATTENTION

You MUST log in to access any administrator function, including Network, Communication Watchdog Timer, and Firmware Update tabs. If you forget the password, you may hold down the Reset button to clear the password and load factory defaults. **This will result in the loss of all configuration settings!**

I/O Configuration Tab (Administrator)

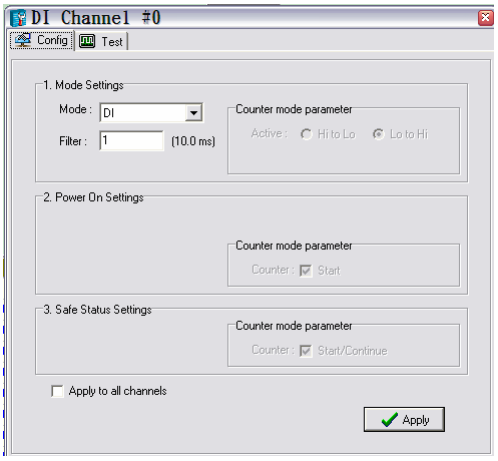
When logged on as an administrator, you may double click on a channel in the **I/O Configuration** tab to configure that channel's settings.



Channel	Mode	Status	Filter	Trigger
[DI]: 00	DI	Off	10.0 ms	--
[DI]: 01	Counter	0	10.0 ms	L2H
[DI]: 02	Counter	0	10.0 ms	L2H
[DI]: 03	Counter	0	10.0 ms	L2H
[DI]: 04	Counter	0	10.0 ms	L2H
[DI]: 05	Counter	0	10.0 ms	L2H
[DI]: 06	Counter	0	10.0 ms	L2H
[DI]: 07	Counter	0	10.0 ms	L2H
[DI]: 08	Counter	0	10.0 ms	L2H
[DI]: 09	Counter	0	10.0 ms	L2H
[DI]: 10	Counter	0	10.0 ms	L2H
[DI]: 11	Counter	0	10.0 ms	L2H

Channel	Mode	Status	Low	High
[DO]: 00	DO	On	--	--
[DO]: 01	Pulse	1.0Hz	500.0 ms	500.0 ms
[DO]: 02	Pulse	1.0Hz	500.0 ms	500.0 ms
[DO]: 03	Pulse	1.0Hz	500.0 ms	500.0 ms
[DO]: 04	Pulse	1.0Hz	500.0 ms	500.0 ms
[DO]: 05	Pulse	1.0Hz	500.0 ms	500.0 ms
[DO]: 06	Pulse	1.0Hz	500.0 ms	500.0 ms
[DO]: 07	Pulse	1.0Hz	500.0 ms	500.0 ms

Configuring Digital Input Channels



The R2110 is equipped with 12 DI (digital input) channels that can be separately set to "DI" or "Event Counter Mode." In DI mode, the specifications are as follows:

Type	Logic 0 (OFF)	Logic 1 (ON)
Dry contact	close to GND	open
Wet contact	0 to3 V	10 to 30 V

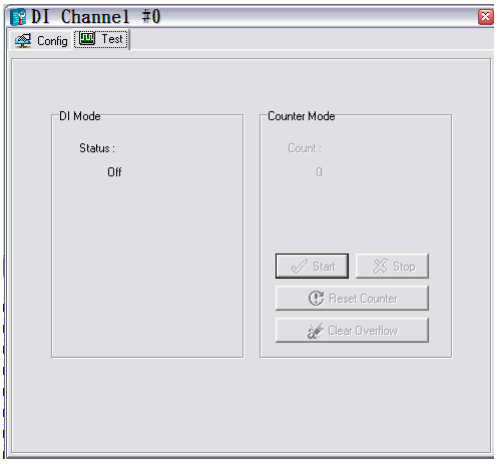
In Event Counter mode, the ioLogik's DI channel accepts limit or proximity switches and counts events according to the ON/OFF status. You may select from two modes, "Lo to Hi" or "Hi to Lo." When "Lo to Hi" is selected, the counter value increases while the switch is pushed. When "Hi to Lo" is selected, the counter value increases when the switch is push and released. The sampling rate of the counter is 50 Hz. This function is designed for low speed switching, not for motor control.

To eliminate the problem of bouncing with the switch, the ioLogik R2110 provides software filtering. It is configurable in multiples of 10 ms. For example, a setting of 2 would mean a 20 ms filter (2 × 10 ms). The maximum value allowed by the software filter is 65535. Setting the filter to "0" causes the system to filter all signals.

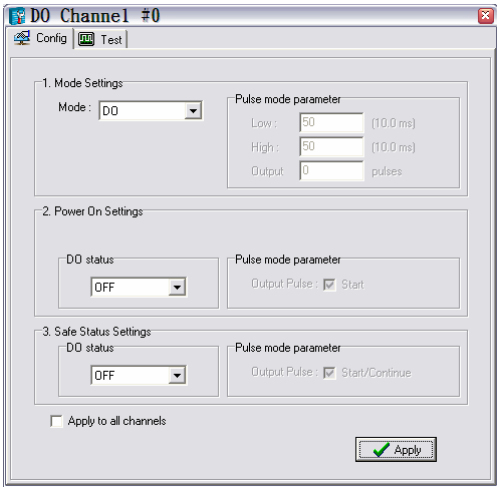
Power On Settings: For DI channels in Event Counter mode, you may configure whether or not counting begins at power up.

Safe Status Settings: For DI channels in Event Counter mode, you can configure whether or not counting starts or continues when Safe Status has been activated. When the network connection is lost as specified in the Host Connection Watchdog, the ioLogik R2110 will start or stop the counter according to the channel's Safe Status settings. Note that the Host Connection Watchdog is disabled by default, and must be enabled for Safe Status settings to have effect.

Test I/O: You can test DI channels in the **Test** tab. You may see how the status or counter value responds when the attached input device is manipulated.



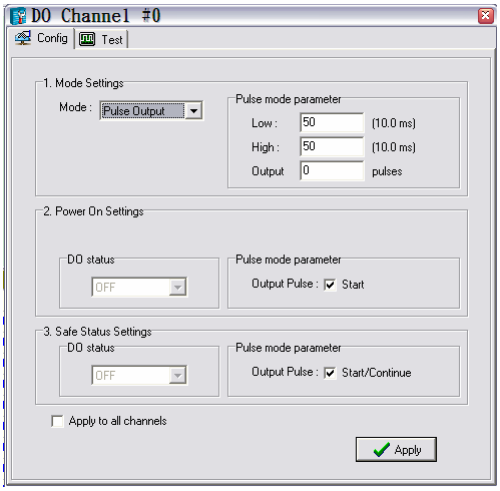
Configuring Digital Output Channels



The ioLogik R2110 is equipped with 8 DO (digital output or sink) channels that can be set individually to "DO" or "Pulse Output" mode. In DO mode, the specification is as follows.

Type	Logic 0 (OFF)	Logic 1 (ON)
DO mode	Open	Short

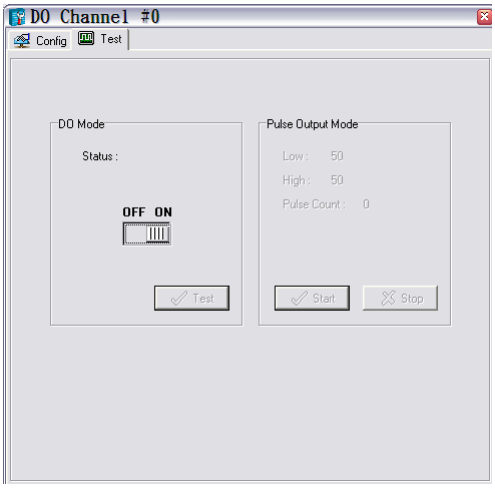
In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The Low and High parameters are in multiples of 10.0 ms, with a maximum setting of 65535. To set the low level width for 500 ms, you would enter 50 (because 50 × 10 ms = 500 ms). A setting of **100** for both Low and High would generate a square wave with a 2-second cycle. The **Output** parameter specifies the number of pulses to send. When set to **0**, the system will send pulses indefinitely.



Power On Settings: Use this field to set the initial status for the DO channel when the ioLogik is powered on.

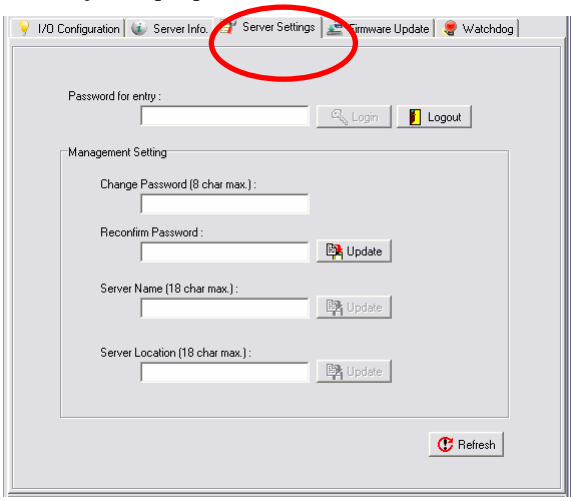
Safe Status Settings: Use this field to specify how the DO channel responds to a break in network communication. When the network connection is lost as specified in the Host Connection Watchdog, the ioLogik R2110 will reset all channels according to their Safe Status settings. Note that the Host Connection Watchdog is disabled by default, and must be enabled for Safe Status settings to have effect.

Test I/O: You can test the DO channel in the **Test** tab,



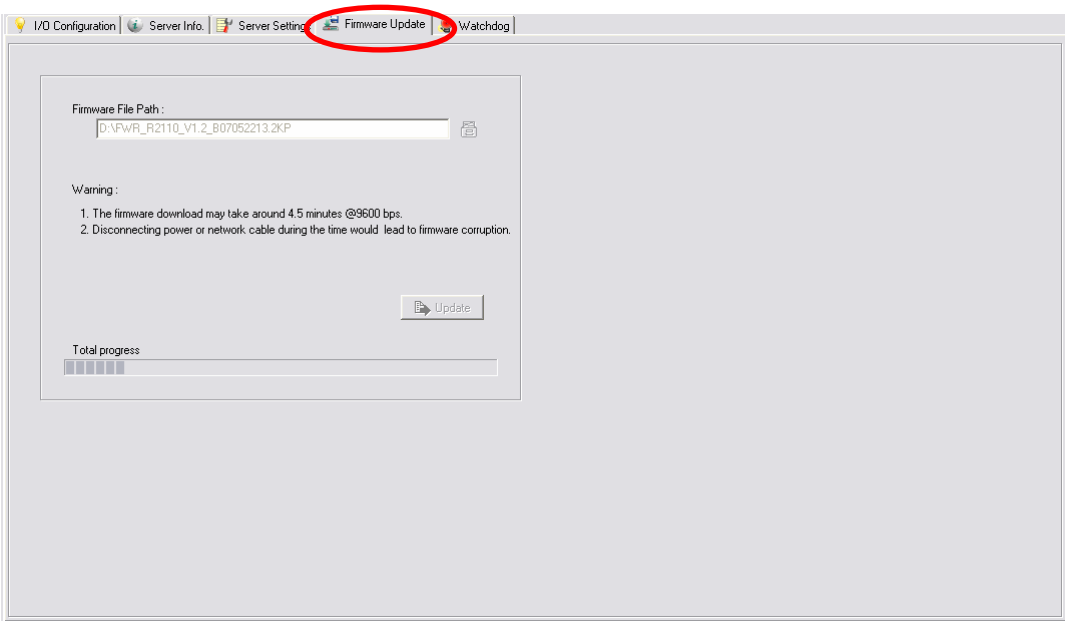
Server Settings Tab (Administrator)

You may set up a password, server name, and location in the **Server Settings** tab.



Firmware Update Tab

The ioLogik R2110 supports remote firmware updates through the **Firmware Update** tab. Enter the path to the firmware file or click on the icon to browse for the file. Click on **Update** to update the firmware. The wizard will lead you through the process until the server is restarted.



ATTENTION

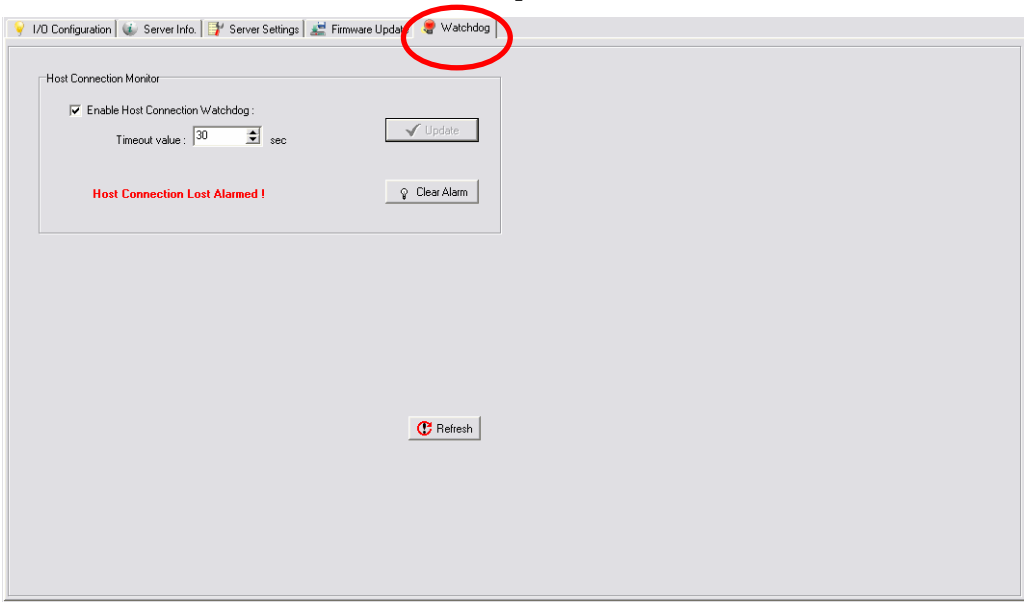
Do not interrupt the firmware update process! An interruption in the process may result in your device becoming unrecoverable.

After the firmware is updated, the ioLogik will restart and you will have to log in again to access administrator functions.

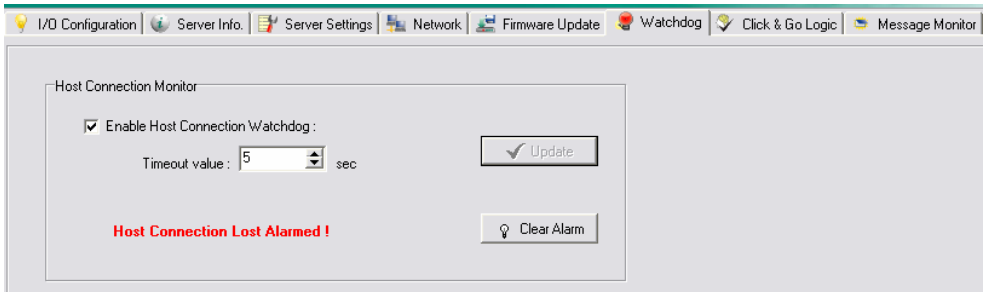
The firmware on any attached I/O expansion module, such as an ioLogik R2000 server, must be updated over the RS-485 bus. Firmware on cascaded modules cannot be updated over Ethernet.

Watchdog Tab

The **Watchdog** tab is where you configure the Host Connection Watchdog, which is used with the Safe Status settings to define each channel's response to a lost connection. When the ioLogik R2110 loses its connection as specified in the timeout, the Host Connection Watchdog will switch the ioLogik R2110 to Safe Status and all channels will reset to their Safe Status settings. By default, the Watchdog is disabled. To enable the Watchdog, make sure **Enable Host Connection Watchdog** is checked, set the Timeout value, then click the **Update** button.

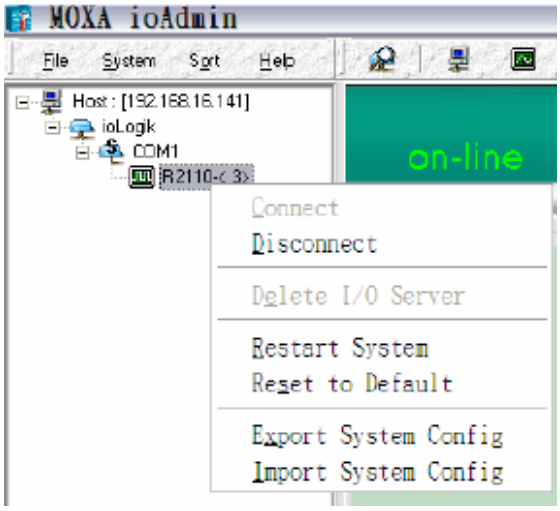


After the Watchdog is enabled, the ioLogik R2110 will enter safe status if the RS-485 connection is lost. Once the connection has been restored, you will need to return to the Watchdog Tab in order to exit safe status. There will be a message saying "Host Connection Lost", indicating that the server is in safe status. Click **Clear Alarm** to exit safe status and return to normal operation.



Server Context Menu

The server context menu is accessed by right clicking on the server model name in the navigation panel.



Connect

Select this command to have ioAdmin attempt a re-connection to the selected ioLogik server.

Disconnect

Select this command to have ioAdmin drop the connection with the selected ioLogik server.

Delete I/O Server

Select this command to have ioAdmin remove the selected server.

Restart System

Select this command to restart the ioLogik from a remote site. You will need to log in as an administrator to use this function.

Reset to Default

Select this command to reset all settings, including console password, to factory default values. You will need to log in as an administrator to use this function.

Export System Config

Select this command to export the configuration of the ioLogik to a text file. You will need to log in as an administrator to use this function. It is strongly recommended you use this method to back up your configuration after you have finished configuring the ioLogik for your application.

Import System Config

Select this command to reload a configuration that was exported to a text file. You will need to restart the ioLogik in order for the new configuration to take effect. This command may be used to restore a configuration after loading the factory defaults, or to duplicate a configuration to multiple ioLogik units.

4

Cascading with Other I/O Servers

The ioLogik R2110 can act both as a standalone I/O server and as an extension module to other I/O servers. This chapter explains how to use the ioLogik R2110 as an extension module to ioLogik E2000 I/O servers.

The following topics are covered:

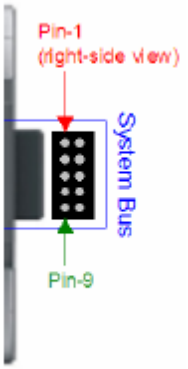
- **Introduction**
- **Cascading System Bus**
- **Hardware Installation**
- **Using ioAdmin with Cascaded I/O Servers**
  - Adding One I/O Server
  - Adding Two or More I/O Servers
  - Removing Cascaded I/O Servers
- **Limitations**

Introduction

The ioLogik R2110 can serve as an extension module to provide additional I/O channels to an ioLogik E2210 or E2240 Ethernet I/O server. Up to 31 units can be chained or cascaded together using each unit's built-in connectors.

Cascading System Bus

The I/O servers connect to each other over the cascading system bus, which uses RS-485 and Modbus protocols. Pin assignments for the female system bus connector are shown below. This is the connector that protrudes from the right side of the unit.



Pin	1	2	3	4	5
Signal	V+	V-	V+	V-	NC

Pin	6	7	8	9	10
Signal	NC	Data+	SYNC	Data-	GND

Hardware Installation

To install the ioLogik R2110 as an extension module, simply snap it into place alongside the ioLogik E2000 and the two units will lock together. Press the release button to detach the unit.

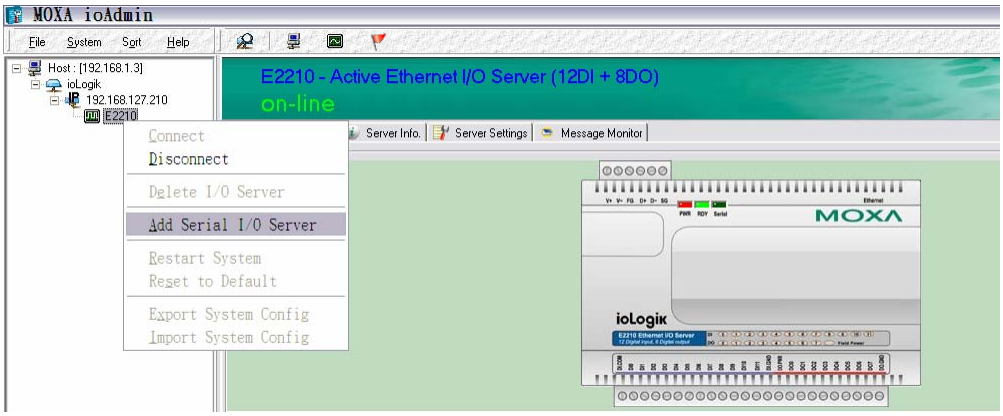
Power is provided through the ioLogik E2000's system bus. Depending on the power requirements of your application, external power can also be supplied to the unit through the unit's power terminals.

Using ioAdmin with Cascaded I/O Servers

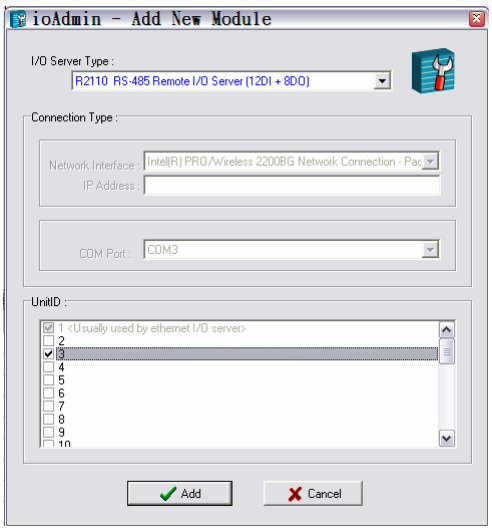
Adding One I/O Server

ioAdmin can be used to access the I/O channels of all cascaded I/O servers. In the following instructions, the ioLogik E2210 and R2110 are used as examples:

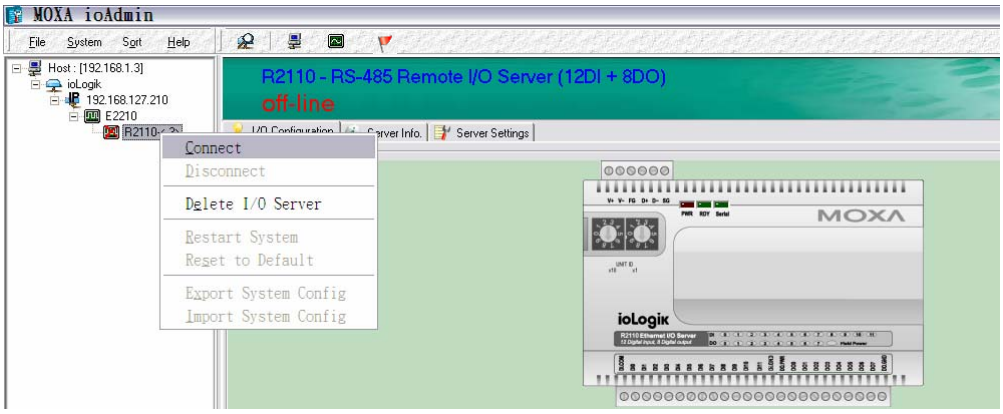
1. Verify that the E2210 has been installed and has been opened in ioAdmin. Snap the E2210 and R2110 together. Set the unit ID for the R2110 starting from "2".
2. In ioAdmin, right-click the E2210 in the navigation panel and select **"Add Serial I/O Server"** in the context menu.



3. Select the appropriate I/O Server type and UnitID ("R2110 RS-485" and "3" in this example). Click **"Add"**.



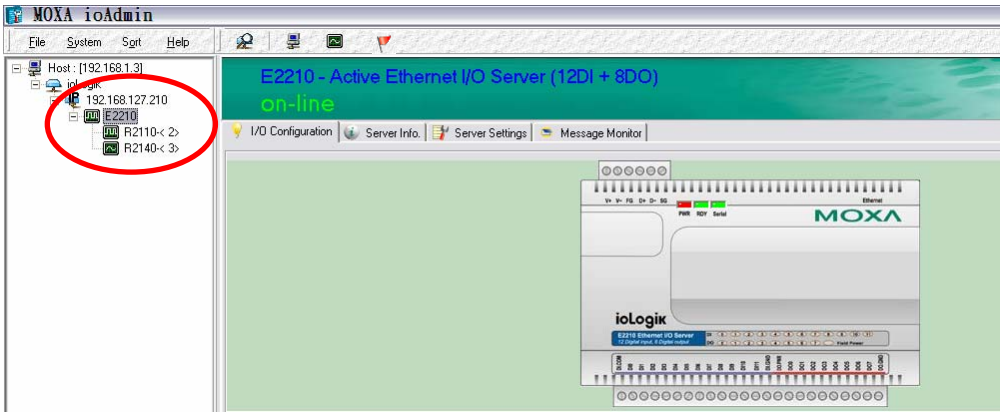
4. The R2110 will appear with its unit ID under the E2210 in ioAdmin's navigation panel. If the R2110 appears off-line, open its context menu in the navigation panel and select **"Connect"** to bring it on-line. Once the R2110 is on-line, you will be able to use ioAdmin to monitor and control its I/O channels.



Adding Two or More I/O Servers

Multiple I/O servers can be cascaded together for even more I/O channels. The following instructions show how multiple cascaded I/O servers are accessed in ioAdmin, using the ioLogik E2210, R2110, and R2140 as examples:

1. Verify that the E2210 has been installed and has been opened in ioAdmin. Snap the R2110 onto the E2210, then snap the R2140 onto the R2110. Set the unit IDs for the R2110 and R2140.
2. In ioAdmin, right-click the E2210 in the navigation panel and select "Add Serial I/O Server" in the context menu.
3. Select the appropriate I/O Server type and UnitID. Click **"Add"**.
4. Repeat steps 2 and 3 using the appropriate selections for the R2140.
5. Both the R2110 and R2140 will appear with their unit IDs under the E2210 in ioAdmin's navigation panel. If a server appears off-line, open its context menu in the navigation panel and select **"Connect"** to bring it on-line. Once all I/O servers are on-line, you will be able to use ioAdmin to monitor and control each server's I/O channels.



Removing Cascaded I/O Servers

To remove a cascaded I/O server in ioAdmin, right-click the desired server in the navigation panel and select "Delete I/O Server" in the context menu.

Limitations

There are some limitations when using the ioLogik R2110 as an extension module to ioLogik E2000 servers. Although each I/O channel on a cascaded module can be monitored and controlled over Ethernet, the cascaded module will not support the following items:

- Click&Go
- Active messaging
- SNMP trap messages
- E-mail messages
- Upgrade firmware

A

Liquid Crystal Display Module (LCM)

The ioLogik R2110 supports an optional detachable liquid crystal display module (LCM) for easier field maintenance. The LCM is hot-pluggable and can be used to configure the network settings or display other settings. When plugged in, the module displays the ioLogik R2110 "home page," and pressing any button takes you into the settings and configuration.

LCM Controls

The up and down buttons navigate between the current options. The right and left buttons enter and exit the submenus. The center button is used when modifying settings or restarting the server.

Button	Function
Up	go to the previous item
Down	go to the next item
Left	exit the current submenu and return to the previous menu (go up one level)
Right	enter the selected submenu (go down one level)
Center	enter/exit editing mode

An "e" in the upper right hand corner of the display indicates that the parameter can be modified. Press the center button on the LCM to modify that parameter's settings.

LCM Options

Display	Explanation / Actions
`ioLogik R2110` `ID:01 Bps:115200`	This is the default "home page" showing the unit ID and baudrate. Press the down button to view the submenus.
`<ioLogik R2110>` `server`	Enter this submenu to display information about the specific server you are viewing: ● serial number ● name ● location ● R2110 f/w ver ● lcm f/w ver ● model name
`<ioLogik R2110>` `serial port`	Enter this submenu to display the RS-485 serial communication port settings: ● RS-485 Setting: 115200,n,8,1

Display	Explanation / Actions
<ioLogik R2110> i/o setting	Enter this submenu to access I/O channel status. DI channels may be ON/OFF or CT (for event counter). DO channels may be ON/OFF or Pulse. Here are examples of settings that you might see: ● DI-00 = ON ● DI-07 [CT] = 0 ● DO-01 = [Pulse] = 1 Hz ● DO-03 = ON, or OFF Press up or down to navigate through the different I/O channels without having to go back to the previous menu.
<ioLogik R2110> save/restart	Enter this submenu to display the **restart now** submenu. Enter the **restart now** submenu to display the **restart** option. Press the center button to modify this option, then select **enable** to save changes and reboot the I/O server. The **disable** option has no effect.

ATTENTION

Any configuration changes that are made through the LCM will not take effect until the ioLogik R2110 is restarted.

B

Modbus/RTU Address Mappings

R2110 Modbus Mapping

0xxxx Read/Write Coils (Functions 1, 5, 15)

Reference	Address	Data Type	Description
00001	0x0000	1 bit	CH0 DO value 0: off 1: on
00002	0x0001	1 bit	CH1 DO value 0: off 1: on
00003	0x0002	1 bit	CH2 DO value 0: off 1: on
00004	0x0003	1 bit	CH3 DO value 0: off 1: on
00005	0x0004	1 bit	CH4 DO value 0: off 1: on
00006	0x0005	1 bit	CH5 DO value 0: off 1: on
00007	0x0006	1 bit	CH6 DO value 0: off 1: on
00008	0x0007	1 bit	CH7 DO value 0: off 1: on
00009	0x0008	1 bit	CH0 DO power-on value 0: off 1: on
00010	0x0009	1 bit	CH1 DO power-on value 0: off 1: on
00011	0x000A	1 bit	CH2 DO power-on value 0: off 1: on
00012	0x000B	1 bit	CH3 DO power-on value 0: off 1: on
00013	0x000C	1 bit	CH4 DO power-on value 0: off 1: on
00014	0x000D	1 bit	CH5 DO power-on value 0: off 1: on

Reference	Address	Data Type	Description
00015	0x000E	1 bit	CH6 DO power-on value 0: off 1: on
00016	0x000F	1 bit	CH7 DO power-on value 0: off 1: on
00017	0x0010	1 bit	CH0 DO safe value 0: off 1: on
00018	0x0011	1 bit	CH1 DO safe value 0: off 1: on
00019	0x0012	1 bit	CH2 DO safe value 0: off 1: on
00020	0x0013	1 bit	CH3 DO safe value 0: off 1: on
00021	0x0014	1 bit	CH4 DO safe value 0: off 1: on
00022	0x0015	1 bit	CH5 DO safe value 0: off 1: on
00023	0x0016	1 bit	CH6 DO safe value 0: off 1: on
00024	0x0017	1 bit	CH7 DO safe value 0: off 1: on
00025	0x001 8	1 bit	CH0 DO pulse operate status 0: off 1: on
00026	0x0019	1 bit	CH1 DO pulse operate status 0: off 1: on
00027	0x001A	1 bit	CH2 DO pulse operate status 0: off 1: on
00028	0x001B	1 bit	CH3 DO pulse operate status 0: off 1: on
00029	0x001C	1 bit	CH4 DO pulse operate status 0: off 1: on
00030	0x001D	1 bit	CH5 DO pulse operate status 0: off 1: on
00031	0x001E	1 bit	CH6 DO pulse operate status 0: off 1: on
00032	0x001F	1 bit	CH7 DO pulse operate status 0: off 1: on
00033	0x0020	1 bit	CH0 DO power-on pulse operate status 0: off 1: on
00034	0x0021	1 bit	CH1 DO power-on pulse operate status 0: off 1: on
00035	0x0022	1 bit	CH2 DO power-on pulse operate status 0: off 1: on
00036	0x0023	1 bit	CH3 DO power-on pulse operate status 0: off 1: on

Reference	Address	Data Type	Description
00037	0x0024	1 bit	CH4 DO power-on pulse operate status 0: off 1: on
00038	0x0025	1 bit	CH5 DO power-on pulse operate status 0: off 1: on
00039	0x0026	1 bit	CH6 DO power-on pulse operate status 0: off 1: on
00040	0x0027	1 bit	CH7 DO power-on pulse operate status 0: off 1: on
00041	0x0028	1 bit	CH0 DO safe pulse operate status 0: off 1: on
00042	0x0029	1 bit	CH1 DO safe pulse operate status 0: off 1: on
00043	0x002A	1 bit	CH2 DO safe pulse operate status 0: off 1: on
00044	0x002B	1 bit	CH3 DO safe pulse operate status 0: off 1: on
00045	0x002C	1 bit	CH4 DO safe pulse operate status 0: off 1: on
00046	0x002D	1 bit	CH5 DO safe pulse operate status 0: off 1: on
00047	0x002E	1 bit	CH6 DO safe pulse operate status 0: off 1: on
00048	0x002F	1 bit	CH7 DO safe pulse operate status 0: off 1: on
00049	0x0030	1 bit	CH0 DI counter status 0: off 1: on
00040	0x003 1	1 bit	CH1 DI counter status 0: off 1: on
00041	0x0032	1 bit	CH2 DI counter status 0: off 1: on
00042	0x0033	1 bit	CH3 DI counter status 0: off 1: on
00043	0x0034	1 bit	CH4 DI counter status 0: off 1: on
00044	0x0035	1 bit	CH5 DI counter status 0: off 1: on
00045	0x0036	1 bit	CH6 DI counter status 0: off 1: on
00056	0x0037	1 bit	CH7 DI counter status 0: off 1: on
00057	0x0038	1 bit	CH8 DI counter status 0: off 1: on
00058	0x0039	1 bit	CH9 DI counter status 0: off 1: on

Reference	Address	Data Type	Description
00059	0x003A	1 bit	CH10 DI counter status 0: off 1: on
00060	0x003B	1 bit	CH1 1 DI counter status 0: off 1: on
00061	0x003C	1 bit	CH0 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00062	0x003D	1 bit	CH1 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00063	0x003E	1 bit	CH2 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00064	0x003F	1 bit	CH3 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00065	0x0040	1 bit	CH4 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00066	0x0041	1 bit	CH5 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value

Reference	Address	Data Type	Description
00067	0x0042	1 bit	CH6 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00068	0x0043	1 bit	CH7 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00069	0x0044	1 bit	CH8 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00070	0x0045	1 bit	CH9 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00071	0x0046	1 bit	CH10 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00072	0x0047	1 bit	CH1 1 DI clear counter value Read: 0: no action Write: 1: clear counter value 0: return illegal data value
00073	0x0048	1 bit	CH0 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value

Reference	Address	Data Type	Description
00074	0x0049	1 bit	CH1 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1 : return illegal data value
00075	0x004A	1 bit	CH2 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00076	0x004B	1 bit	CH3 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00077	0x004C	1 bit	CH4 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00078	0x004D	1 bit	CH5 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00079	0x004E	1 bit	CH6 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00080	0x004F	1 bit	CH7 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value

Reference	Address	Data Type	Description
00081	0x0050	1 bit	CH8 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00082	0x005 1	1 bit	CH9 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00083	0x0052	1 bit	CH10 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00084	0x0053	1 bit	CH1 1 DI counter overflow status Read: 0: normal 1: overflow Write: 0: clear overflow status 1: return illegal data value
00085	0x0054	1 bit	CH0 DI counter trigger : 0=Low to High, 1=High to Low
00086	0x0055	1 bit	CH1 DI counter trigger : 0=Low to High, 1=High to Low
00087	0x0056	1 bit	CH2 DI counter trigger : 0=Low to High, 1=High to Low
00088	0x0057	1 bit	CH3 DI counter trigger : 0=Low to High, 1=High to Low
00089	0x0058	1 bit	CH4 DI counter trigger : 0=Low to High, 1=High to Low
00090	0x0059	1 bit	CH5 DI counter trigger : 0=Low to High, 1=High to Low
00091	0x005A	1 bit	CH6 DI counter trigger : 0=Low to High, 1=High to Low
00092	0x005B	1 bit	CH7 DI counter trigger : 0=Low to High, 1=High to Low
00093	0x005C	1 bit	CH8 DI counter trigger : 0=Low to High, 1=High to Low
00094	0x005D	1 bit	CH9 DI counter trigger : 0=Low to High, 1=High to Low
00095	0x005E	1 bit	CH10 DI counter trigger : 0=Low to High, 1=High to Low
00096	0x005F	1 bit	CH1 1 DI counter trigger : 0=Low to High, 1=High to Low
00097	0x0060	1 bit	CH0 DI counter power-on status 0: off 1: on
00098	0x0061	1 bit	CH1 DI counter power-on status 0: off 1: on
00099	0x0062	1 bit	CH2 DI counter power-on status 0: off 1: on
00100	0x0063	1 bit	CH3 DI counter power-on status 0: off 1: on

Reference	Address	Data Type	Description
00101	0x0064	1 bit	CH4 DI counter power-on status 0: off 1: on
00102	0x0065	1 bit	CH5 DI counter power-on status 0: off 1: on
00103	0x0066	1 bit	CH6 DI counter power-on status 0: off 1: on
00104	0x0067	1 bit	CH7 DI counter power-on status 0: off 1: on
00105	0x0068	1 bit	CH8 DI counter power-on status 0: off 1: on
00106	0x0069	1 bit	CH9 DI counter power-on status 0: off 1: on
00107	0x006A	1 bit	CH10 DI counter power-on status 0: off 1: on
00108	0x006B	1 bit	CH1 1 DI counter power-on status 0: off 1: on
00109	0x006C	1 bit	CH0 DI counter safe status 0: off 1: on
00110	0x006D	1 bit	CH1 DI counter safe status 0: off 1: on
00111	0x006E	1 bit	CH2 DI counter safe status 0: off 1: on
00112	0x006F	1 bit	CH3 DI counter safe status 0: off 1: on
00113	0x0070	1 bit	CH4 DI counter safe status 0: off 1: on
00114	0x0071	1 bit	CH5 DI counter safe status 0: off 1: on
00115	0x0072	1 bit	CH6 DI counter safe status 0: off 1: on
00116	0x0073	1 bit	CH7 DI counter safe status 0: off 1: on
00117	0x0074	1 bit	CH8 DI counter safe status 0: off 1: on
00118	0x0075	1 bit	CH9 DI counter safe status 0: off 1: on
00119	0x0076	1 bit	CH10 DI counter safe status 0: off 1: on
00120	0x0077	1 bit	CH1 1 DI counter safe status 0: off 1: on

1xxxx Read Only Coils (Function 2)

Reference	Address	Data Type	Description
10001	0x0000	1 bit	CH0 DI value
10002	0x0001	1 bit	CH1 DI value
10003	0x0002	1 bit	CH2 DI value
10004	0x0003	1 bit	CH3 DI value
10005	0x0004	1 bit	CH4 DI value
10006	0x0005	1 bit	CH5 DI value
10007	0x0006	1 bit	CH6 DI value
10008	0x0007	1 bit	CH7 DI value
10009	0x0008	1 bit	CH8 DI value
10010	0x0009	1 bit	CH9 DI value
10011	0x000A	1 bit	CH10 DI value
10012	0x000B	1 bit	CH11 DI value

3xxxx Read Only Registers (Function 4)

Reference	Address	Data Type	Description
30001	0x0000	word	CH0 DI counter value hi-byte
30002	0x0001	word	CH0 DI counter value lo-byte
30003	0x0002	word	CH1 DI counter value hi-byte
30004	0x0003	word	CH1 DI counter value lo-byte
30005	0x0004	word	CH2 DI counter value hi-byte
30006	0x0005	word	CH2 DI counter value lo-byte
30007	0x0006	word	CH3 DI counter value hi-byte
30008	0x0007	word	CH3 DI counter value lo-byte
30009	0x0008	word	CH4 DI counter value hi-byte
30010	0x0009	word	CH4 DI counter value lo-byte
30011	0x000A	word	CH5 DI counter value hi-byte
30012	0x000B	word	CH5 DI counter value lo-byte
30013	0x000C	word	CH6 DI counter value hi-byte
30014	0x000D	word	CH6 DI counter value lo-byte
30015	0x000E	word	CH7 DI counter value hi-byte
30016	0x000F	word	CH7 DI counter value lo-byte
30017	0x0010	word	CH8 DI counter value hi-byte
30018	0x001 1	word	CH8 DI counter value lo-byte
30019	0x0012	word	CH9 DI counter value hi-byte
30020	0x0013	word	CH9 DI counter value lo-byte
30021	0x0014	word	CH10 DI counter value hi-byte
30022	0x001 5	word	CH1 0 DI counter value lo-byte
30023	0x001 6	word	CH1 1 DI counter value hi-byte
30024	0x001 7	word	CH1 1 DI counter value lo-byte

4xxxx Read/Write Registers (Functions 3, 6, 16)

Reference	Address	Data Type	Description
40001	0x0000	word	CH0 DO pulse output count value hi-word
40002	0x0001	word	CH0 DO pulse output count value lo-word
40003	0x0002	word	CH1 DO pulse output count value hi-word
40004	0x0003	word	CH1 DO pulse output count value lo-word
40005	0x0004	word	CH2 DO pulse output count value hi-word
40006	0x0005	word	CH2 DO pulse output count value lo-word
40007	0x0006	word	CH3 DO pulse output count value hi-word
40008	0x0007	word	CH3 DO pulse output count value lo-word
40009	0x0008	word	CH4 DO pulse output count value hi-word
40010	0x0009	word	CH4 DO pulse output count value lo-word
40011	0x000A	word	CH5 DO pulse output count value hi-word
40012	0x000B	word	CH5 DO pulse output count value lo-word
40013	0x000C	word	CH6 DO pulse output count value hi-word
40014	0x000D	word	CH6 DO pulse output count value lo-word
40015	0x000E	word	CH7 DO pulse output count value hi-word
40016	0x000F	word	CH7 DO pulse output count value lo-word
40017	0x0010	word	CH0 DO pulse low signal width
40018	0x001 1	word	CH1 DO pulse low signal width
40019	0x0012	word	CH2 DO pulse low signal width
40020	0x0013	word	CH3 DO pulse low signal width
40021	0x0014	word	CH4 DO pulse low signal width
40022	0x001 5	word	CH5 DO pulse low signal width
40023	0x0016	word	CH6 DO pulse low signal width
40024	0x0017	word	CH7 DO pulse low signal width
40025	0x001 8	word	CH0 DO pulse high signal width
40026	0x0019	word	CH1 DO pulse high signal width
40027	0x001A	word	CH2 DO pulse high signal width
40028	0x001B	word	CH3 DO pulse high signal width
40029	0x001C	word	CH4 DO pulse high signal width
40030	0x001D	word	CH5 DO pulse high signal width
40031	0x001E	word	CH6 DO pulse high signal width
40032	0x001F	word	CH7 DO pulse high signal width
40033	0x0020	word	CH0 DO mode 0: DO 1: pulse
40034	0x0021	word	CH1 DO mode 0: DO 1: pulse
40035	0x0022	word	CH2 DO mode 0: DO 1: pulse
40036	0x0023	word	CH3 DO mode 0: DO 1: pulse

Reference	Address	Data Type	Description
40037	0x0024	word	CH4 DO mode 0: DO 1: pulse
40038	0x0025	word	CH5 DO mode 0: DO 1: pulse
40039	0x0026	word	CH6 DO mode 0: DO 1: pulse
40040	0x0027	word	CH7 DO mode 0: DO 1: pulse
40041	0x0028	word	CH0 DI / counter filter
40042	0x0029	word	CH1 DI / counter filter
40043	0x002A	word	CH2 DI / counter filter
40044	0x002B	word	CH3 DI / counter filter
40045	0x002C	word	CH4 DI / counter filter
40046	0x002D	word	CH5 DI / counter filter
40047	0x002E	word	CH6 DI / counter filter
40048	0x002F	word	CH7 DI / counter filter
40049	0x0030	word	CH8 DI / counter filter
40050	0x003 1	word	CH9 DI / counter filter
40051	0x0032	word	CH10 DI / counter filter
40052	0x0033	word	CH1 1 DI / counter filter
40053	0x0034	word	CH0 DI mode 0: DI 1: counter Other: return illegal data value
40054	0x0035	word	CH1 DI mode 0: DI 1: counter Other: return illegal data value
40055	0x0036	word	CH2 DI mode 0: DI 1: counter Other: return illegal data value
40056	0x0037	word	CH3 DI mode 0: DI 1: counter Other: return illegal data value
40057	0x0038	word	CH4 DI mode 0: DI 1: counter Other: return illegal data value
40058	0x0039	word	CH5 DI mode 0: DI 1: counter Other: return illegal data value

Reference	Address	Data Type	Description
40059	0x003A	word	CH6 DI mode 0: DI 1: counter Other: return illegal data value
40060	0x003B	word	CH7 DI mode 0: DI 1: counter Other: return illegal data value
40061	0x003C	word	CH8 DI mode 0: DI 1: counter Other: return illegal data value
40062	0x003D	word	CH9 DI mode 0: DI 1: counter Other: return illegal data value
40063	0x003E	word	CH10 DI mode 0: DI 1: counter Other: return illegal data value
40064	0x003F	word	CH11 DI mode 0: DI 1: counter Other: return illegal data value

Function 8

Sub-function	Data Field (Request)	Data Field (Response)	Description
0x0001	0x0000	Echo Request Data	Reboot
0x0001	0xFF00	Echo Request Data	Reset to factory defaults

C

Factory Default Settings

The ioLogik R2110 is configured with the following factory defaults:

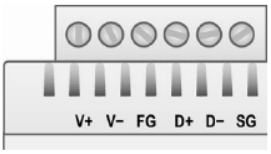
RS-485 Unit ID	1
Baudrate	115200 Kbps
Communication Watchdog	Disable
DI Channel Mode	DI
Filter Time	1 × 10 ms
Counter Trigger	Lo to Hi
Counter Status	Stop
DO Channel Mode	DO
DO Safe Status	Off
Power On Status	Off
Pulse Low Width	1 × 10 ms
Pulse Hi Width	1 × 10 ms
Output Pulses	0 (continuous)
Password	NONE
Module Name	NONE
Module Location	NONE

D

Pinouts and Cable Wiring

Pin Assignment of Terminal Blocks

Power (TB1) and RS-485 (TB2)

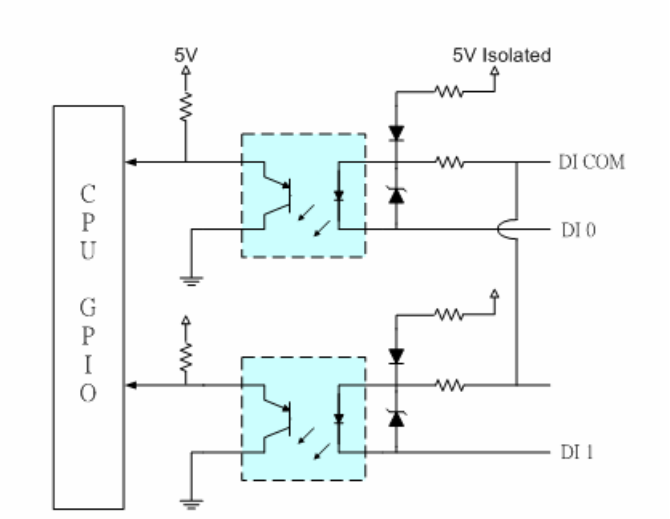


I/O (TB3)

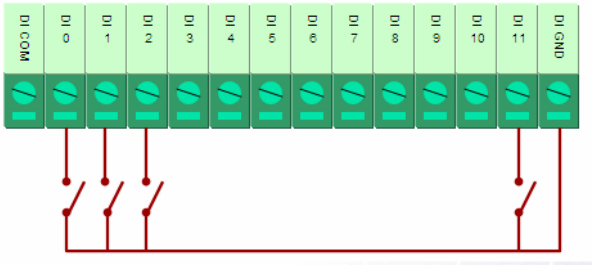
Pin	1	2	3	4	5	6	7	8	9	10	11	12
Signal	DI COM	DI0	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10
Pin	13	14	15	16	17	18	19	20	21	22	23	24
Signal	DI11	DI. GND	DO.PWR	DO0	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO.GND

Digital Input Wiring

Structure



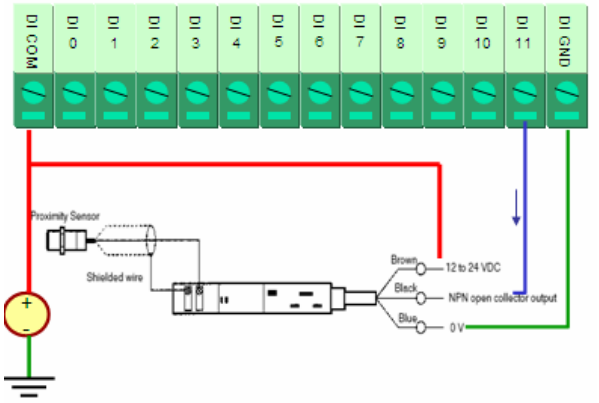
Dry Contact



Wet Contact

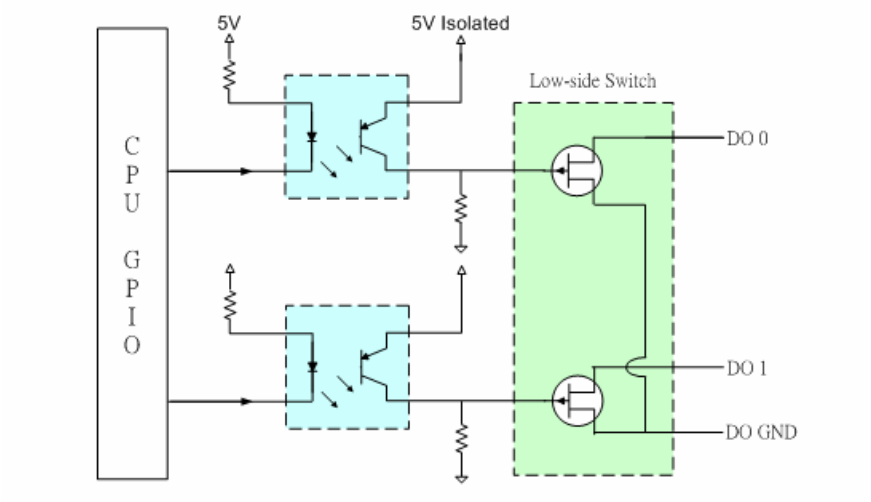
Note: If you are using wet contacts, you must connect "DI COM" to power. For testing purposes, you may connect "DI COM" to the V+ terminal of a power supply.

Example

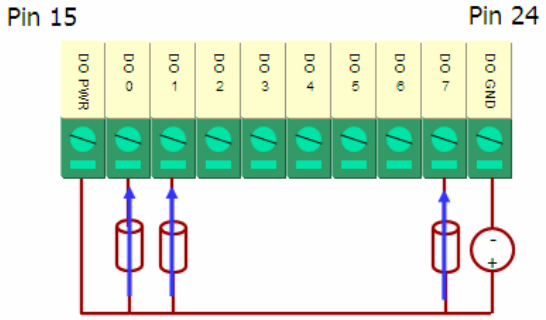


Digital Output

Structure



Output Channel



* DO PWR is for powering up the ***field Power*** LED.